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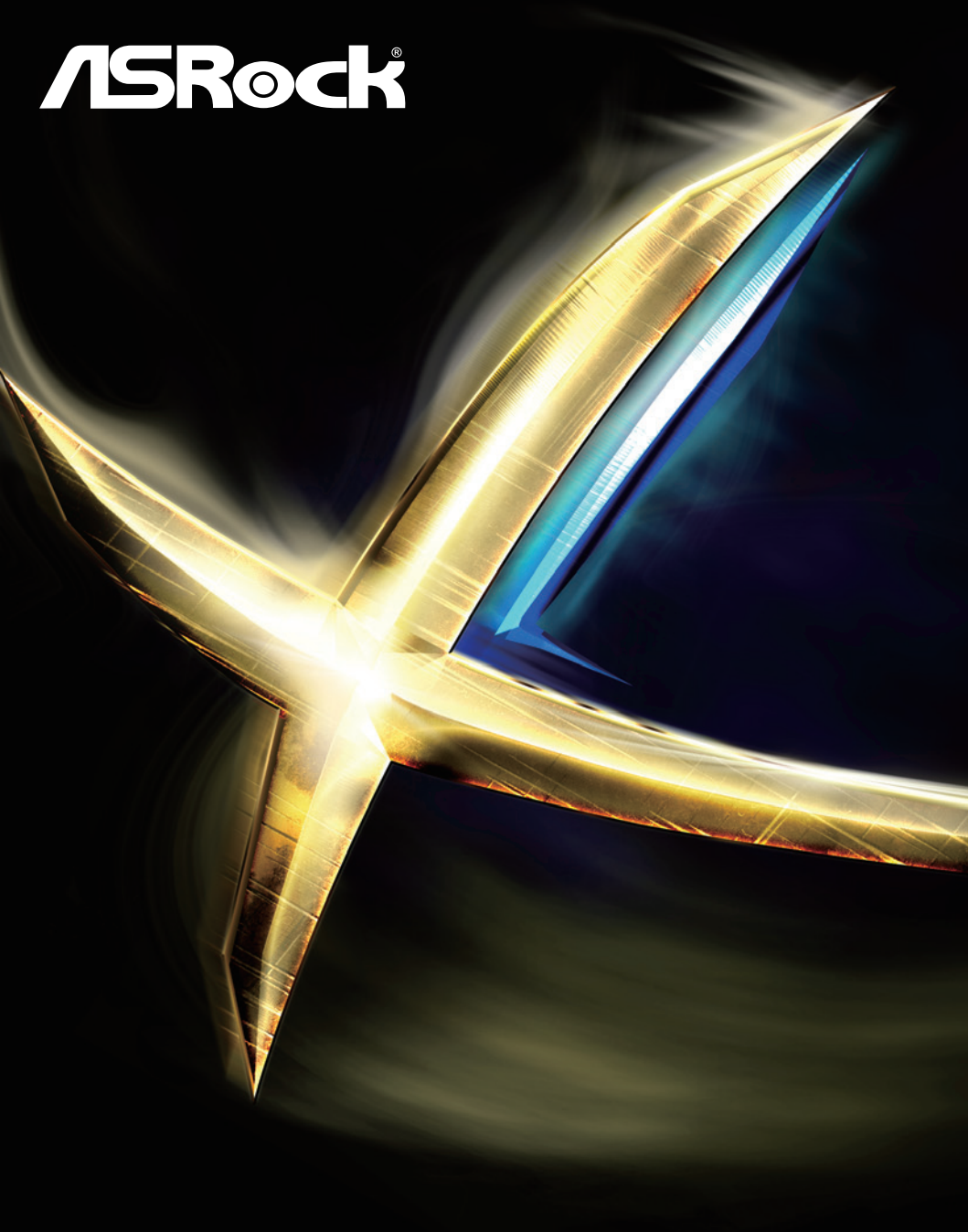

Z97 Extreme9

User Manual

Version 1.0
Published May 2014
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Chapter 1 Introduction

Thank you for purchasing ASRock Z97 Extreme9 motherboard, a reliable motherboard produced under ASRock's consistently stringent quality control. It delivers excellent performance with robust design conforming to ASRock's commitment to quality and endurance.

In this documentation, Chapter 1 and 2 contains the introduction of the motherboard and step-by-step installation guides. Chapter 3 contains the operation guide of the software and utilities. Chapter 4 contains the configuration guide of the BIOS setup.

Because the motherboard specifications and the BIOS software might be updated, the content of this documentation will be subject to change without notice. In case any modifications of this documentation occur, the updated version will be available on ASRock's website without further notice. If you require technical support related to this motherboard, please visit our website for specific information about the model you are using. You may find the latest VGA cards and CPU support list on ASRock's website as well. ASRock website http://www.asrock.com.

1.1 Package Contents

- ASRock Z97 Extreme9 Motherboard (ATX Form Factor)
- ASRock Z97 Extreme9 Quick Installation Guide
- ASRock Z97 Extreme9 Support CD
- 1 x I/O Panel Shield
- 2 x ASRock SLI_Bridge Cards
- 1 x ASRock SLI_Bridge_3S Card
- 1 x ASRock 3-Way SLI Bridge Card
- 4 x Serial ATA (SATA) Data Cables (Optional)
- 1 x HDD Saver Cable
- 2 x Screws for M.2 Sockets
- 1 x Screw for mini-PCIe Slot

1.2 Specifications

Platform	• ATX Form Factor • High Density Glass Fabric PCB • Multiple Filter Cap (MFC) (Filter different noise by 3 different capacitors: DIP solid cap, POSCAP and MLCC)
CPU	• Supports 5th Generation, New 4th and 4th Generation Intel® Core™ i7/i5/i3/Pentium®/Celeron® Processors (Socket 1150) • Digi Power design • 12 Power Phase design • Supports Intel® Turbo Boost 2.0 Technology • Supports Intel® K-Series unlocked CPUs • Supports ASRock BCLK Full-range Overclocking
Chipset	• Intel® Z97
Memory	• Dual Channel DDR3 Memory Technology • 4 x DDR3 DIMM Slots • Supports DDR3 3200+(OC)/2933+(OC)/2800(OC)/2400 (OC)/2133(OC)/1866(OC)/1600/1333/1066 non-ECC, un-buffered memory • Max. capacity of system memory: 32GB (see CAUTION1) • Supports Intel® Extreme Memory Profile (XMP) 1.3 / 1.2 • 15µ Gold Contact in DIMM Slots
Expansion Slot	• 4 x PCI Express 3.0 x16 Slots (PCIE1/PCIE2/PCIE4/PCIE5: single at x16 (PCIE1); dual at x16 (PCIE1) / x16 (PCIE4); triple at x8 (PCIE1) / x8 (PCIE2) / x16 (PCIE4); quad at x8 (PCIE1) / x8 (PCIE2) / x8 (PCIE4) / x8 (PCIE5)) • 1 x PCI Express 2.0 x16 slot (PCIE3: x2 mode) • 1 x mini-PCI Express Slot • PLX PEX 8747 embedded • Supports AMD Quad CrossFireX™, 4-Way CrossFireX™, 3-Way CrossFireX™ and CrossFireX™ • Supports NVIDIA® Quad SLI™, 4-Way SLI™, 3-Way SLI™ and SLI™ • 15µ Gold Contact in VGA PCIe Slot (PCIE1 and PCIE4)

Graphics

- Intel® HD Graphics Built-in Visuals and the VGA outputs can be supported only with processors which are GPU integrated.
- Supports Intel® HD Graphics Built-in Visuals : Intel® Quick Sync Video with AVC, MVC (S3D) and MPEG-2 Full HW Encode1, Intel® InTru™ 3D, Intel® Clear Video HD Technology, Intel® Insider™, Intel® HD Graphics 4400/4600
- Pixel Shader 5.0, DirectX 11.1
- Max. shared memory 1792MB
- Dual graphics output: Support HDMI and DiaplayPort 1.2 ports by independent display controllers
- Supports HDMI with max. resolution up to 4K x 2K (4096x2304) @ 24Hz
- Supports DisplayPort 1.2 with max. resolution up to 4K x 2K (4096x2304) @ 24Hz or 4K x 2K (3840x2160) @ 60Hz
- Supports Auto Lip Sync, Deep Color (12bpc), xvYCC and HBR (High Bit Rate Audio) with HDMI Port (Compliant HDMI monitor is required)
- Supports HDCP with HDMI and DisplayPort 1.2 Ports
- Supports Full HD 1080p Blu-ray (BD) playback with HDMI and DisplayPort 1.2 Ports

Audio

- 7.1 CH HD Audio with Content Protection (Realtek ALC1150 Audio Codec)
- Premium Blu-ray Audio support
- Supports Surge Protection (ASRock Full Spike Protection)
- Supports Purity Sound™ 2
  - Nichicon Fine Gold Series Audio Caps
  - 115dB SNR DAC with Differential Amplifier
  - TI® NE5532 Premium Headset Amplifier (Supports up to 600 Ohms headsets)
  - Direct Drive Technology
  - EMI Shielding Cover
  - PCB Isolate Shielding
- Supports DTS Connect

LAN	• Gigabit LAN 10/100/1000 Mb/s • 1 x Giga PHY Intel® I218V, 1 x GigaLAN Intel® I211AT • Supports Intel® Remote Wake Technology (on Intel® I218V) (see CAUTION2) • Supports Wake-On-LAN • Supports Lightning/ESD Protection (ASRock Full Spike Protection) • Supports Dual LAN with Teaming • Supports Energy Efficient Ethernet 802.3az • Supports PXE
Rear Panel I/O	• 1 x PS/2 Mouse/Keyboard Port • 1 x HDMI Port • 1 x DisplayPort 1.2 • 1 x Optical SPDIF Out Port • 1 x eSATA Connector • 4 x USB 2.0 Ports (Supports ESD Protection (ASRock Full Spike Protection)) • 4 x USB 3.0 Ports (Supports ESD Protection (ASRock Full Spike Protection)) • 2 x RJ-45 LAN Ports with LED (ACT/LINK LED and SPEED LED) • 1 x Clear CMOS Switch • HD Audio Jacks: Rear Speaker / Central / Bass / Line in / Front Speaker / Microphone
Storage	• 6 x SATA3 6.0 Gb/s Connectors by Intel® Z97, support RAID (RAID 0, RAID 1, RAID 5, RAID 10, Intel Rapid Storage Technology 13 and Intel Smart Response Technology), NCQ, AHCI, Hot Plug and ASRock HDD Saver Technology • 4 x SATA3 6.0 Gb/s Connectors by ASMedia ASM1061, support NCQ, AHCI, Hot Plug and ASRock HDD Saver Technology (SATA3_A4 connector is shared with the eSATA port) • 2 x SATA Express Connectors (SATAE_2 is shared with SATA3_1 and SATA3_2; SATAE_1 is shared with SATA3_4, SATA3_5 and M.2 Socket (M2_2)) * Support to be announced • 1 x eSATA Connector by ASMedia ASM1061, supports NCQ, AHCI and Hot Plug

- 1 x Ultra M.2 Socket (M2_1), supports M.2 PCI Express module up to Gen3 x4 (32 Gb/s)
- 1 x M.2_SSD (NGFF) Socket 3 (M2_2), supports M.2 SATA3 6.0 Gb/s module and M.2 PCI Express module up to Gen2 x2 (10 Gb/s)

Connector

- 1 x COM Port Header
- 1 x TPM Header
- 1 x Power LED Header
- 2 x CPU Fan Connectors (1 x 4-pin, 1 x 3-pin)
- 3 x Chassis Fan Connectors (1 x 4-pin, 2 x 3-pin)
- 1 x Power Fan Connector (3-pin)
- 1 x 24 pin ATX Power Connector
- 2 x 8 pin 12V Power Connectors (Hi-Density Power Connector)
- 1 x HDD Saver Connector
- 1 x PCIe Power Connector
- 1 x Front Panel Audio Connector
- 1 x Thunderbolt AIC Connector
- 2 x USB 2.0 Headers (support 4 USB 2.0 ports) (Supports ESD Protection (ASRock Full Spike Protection))
- 2 x USB 3.0 Headers (Support 4 USB 3.0 ports) (ASMedia ASM1074 hub) (Supports ESD Protection (ASRock Full Spike Protection))
- 1 x Dr. Debug with LED
- 1 x Power Switch with LED
- 1 x Reset Switch with LED
- 1 x BIOS Selection Switch

BIOS Feature

- 2 x 64Mb AMI UEFI Legal BIOS with multilingual GUI support (1 x Main BIOS and 1 x Backup BIOS)
- Supports Secure Backup UEFI Technology
- ACPI 1.1 Compliant wake up events
- SMBIOS 2.3.1 Support
- CPU, DRAM, PCH 1.05V, PCH 1.5V Voltage Multi-adjustment

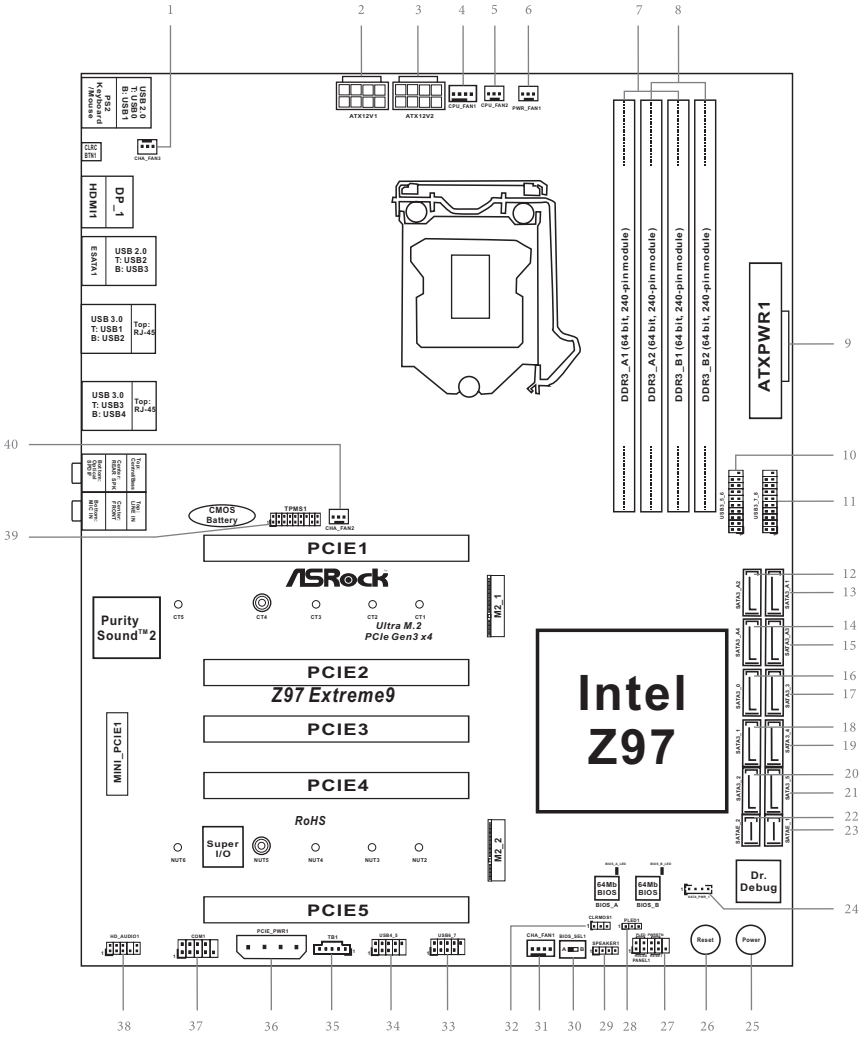
Hardware Monitor	• CPU/Chassis temperature sensing • CPU/Chassis/Power Fan Tachometer • CPU/Chassis Quiet Fan (Auto adjust chassis fan speed by CPU temperature) • CPU/Chassis Fan multi-speed control • Voltage monitoring: +12V, +5V, +3.3V, CPU Input Voltage, CPU Internal Voltages
OS	• Microsoft® Windows® 8.1 32-bit / 8.1 64-bit / 8 32-bit / 8 64-bit / 7 32-bit / 7 64-bit
Certifications	• FCC, CE, WHQL • ErP/EuP Ready (ErP/EuP ready power supply is required)

** For detailed product information, please visit our website: http://www.asrock.com*

Please realize that there is a certain risk involved with overclocking, including adjusting the setting in the BIOS, applying Untied Overclocking Technology, or using third-party overclocking tools. Overclocking may affect your system's stability, or even cause damage to the components and devices of your system. It should be done at your own risk and expense. We are not responsible for possible damage caused by overclocking.

1. *Due to limitation, the actual memory size may be less than 4GB for the reservation for system usage under Windows® 32-bit operating systems. Windows® 64-bit operating systems do not have such limitations. You can use ASRock XFast RAM to utilize the memory that Windows® cannot use.*
2. *To use ASRock Cloud, please make sure you installed the LAN cable on Intel® I218V LAN port. (See P. 10, No. 4.)*

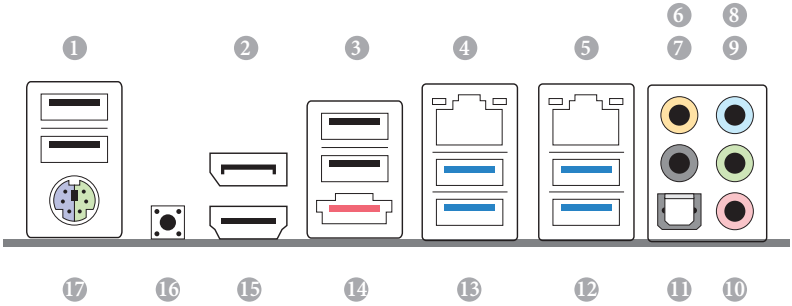
1.3 Motherboard Layout



No.	Description
1	Chassis Fan Connector (CHA_FAN3)
2	ATX 12V Power Connector (ATX12V1)
3	ATX 12V Power Connector (ATX12V2)
4	CPU Fan Connector (CPU_FAN1)
5	CPU Fan Connector (CPU_FAN2)
6	Power Fan Connector (PWR_FAN1)
7	2 x 240-pin DDR3 DIMM Slots (DDR3_A1, DDR3_B1)
8	2 x 240-pin DDR3 DIMM Slots (DDR3_A2, DDR3_B2)
9	ATX Power Connector (ATXPWR1)
10	USB 3.0 Header (USB3_5_6)
11	USB 3.0 Header (USB3_7_8)
12	SATA3 Connector (SATA3_A2)
13	SATA3 Connector (SATA3_A1)
14	SATA3 Connector (SATA3_A4)
15	SATA3 Connector (SATA3_A3)
16	SATA3 Connector (SATA3_0)
17	SATA3 Connector (SATA3_3)
18	SATA3 Connector (SATA3_1)
19	SATA3 Connector (SATA3_4)
20	SATA3 Connector (SATA3_2)
21	SATA3 Connector (SATA3_5)
22	SATA Express Connector (SATAE_2)
23	SATA Express Connector (SATAE_1)
24	HDD Saver Connector (SATA_PWR_1)
25	Power Switch (PWRBTN1)
26	Reset Switch (RSTBTN1)
27	System Panel Header (PANEL1)
28	Power LED Header (PLED1)
29	Chassis Speaker Header (SPEAKER1)
30	BIOS Selection Switch (BIOS_SEL1)
31	Chassis Fan Connector (CHA_FAN1)
32	Clear CMOS Jumper (CLRCMOS1)
33	USB 2.0 Header (USB6_7)

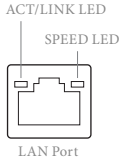
No.	Description
34	USB 2.0 Header (USB4_5)
35	Thunderbolt AIC Connector (TB1)
36	PCIe Power Connector (PCIE_PWR1)
37	COM Port Header (COM1)
38	Front Panel Audio Header (HD_AUDIO1)
39	TPM Header (TPMS1)
40	Chassis Fan Connector (CHA_FAN2)

1.4 I/O Panel



No.	Description	No.	Description
1	USB 2.0 Ports (USB01)	10	Microphone (Pink)
2	DisplayPort 1.2	11	Optical SPDIF Out Port
3	USB 2.0 Ports (USB23)	12	USB 3.0 Ports (USB3_34)
4	LAN RJ-45 Port (Intel® I218V)*	13	USB 3.0 Ports (USB3_12)
5	LAN RJ-45 Port (Intel® I211AT)*	14	eSATA Connector***
6	Central / Bass (Orange)	15	HDMI Port
7	Rear Speaker (Black)	16	Clear CMOS Switch
8	Line In (Light Blue)	17	PS/2 Mouse/Keyboard Port
9	Front Speaker (Lime)**		

** There are two LEDs on each LAN port. Please refer to the table below for the LAN port LED indications.*



Activity / Link LED		Speed LED	
Status	**Description**	**Status**	**Description**
Off	No Link	Off	10Mbps connection
Blinking	Data Activity	Orange	100Mbps connection
On	Link	Green	1Gbps connection

*** If you use a 2-channel speaker, please connect the speaker's plug into "Front Speaker Jack". See the table below for connection details in accordance with the type of speaker you use.*

Audio Output Channels	Front Speaker (No. 9)	Rear Speaker (No. 7)	Central / Bass (No. 6)	Line In (No. 8)
2	V	--	--	--
4	V	V	--	--
6	V	V	V	--
8	V	V	V	V

To enable Multi-Streaming, you need to connect a front panel audio cable to the front panel audio header. After restarting your computer, you will find the "Mixer" tool on your system. Please select "Mixer ToolBox" , click "Enable playback multi-streaming", and click "ok". Choose "2CH", "4CH", "6CH", or "8CH" and then you are allowed to select "Realtek HDA Primary output" to use the Rear Speaker, Central/Bass, and Front Speaker, or select "Realtek HDA Audio 2nd output" to use the front panel audio.

**** The eSATA connector supports SATA with cables within 1 meters. The SATA3_A4 connector is shared with the eSATA port.*

Chapter 2 Installation

This is an ATX form factor motherboard. Before you install the motherboard, study the configuration of your chassis to ensure that the motherboard fits into it.

Pre-installation Precautions

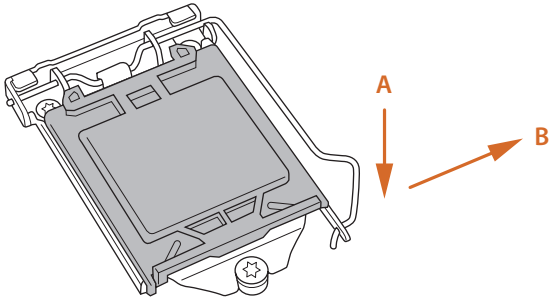
Take note of the following precautions before you install motherboard components or change any motherboard settings.

- Make sure to unplug the power cord before installing or removing the motherboard components. Failure to do so may cause physical injuries and damages to motherboard components.
- In order to avoid damage from static electricity to the motherboard's components, NEVER place your motherboard directly on a carpet. Also remember to use a grounded wrist strap or touch a safety grounded object before you handle the components.
- Hold components by the edges and do not touch the ICs.
- Whenever you uninstall any components, place them on a grounded anti-static pad or in the bag that comes with the components.
- When placing screws to secure the motherboard to the chassis, please do not over-tighten the screws! Doing so may damage the motherboard.

2.1 Installing the CPU

1. *Before you insert the 1150-Pin CPU into the socket, please check if the **PnP cap** is on the socket, if the CPU surface is unclean, or if there are any **bent pins** in the socket. Do not force to insert the CPU into the socket if above situation is found. Otherwise, the CPU will be seriously damaged.*
2. *Unplug all power cables before installing the CPU.*

1



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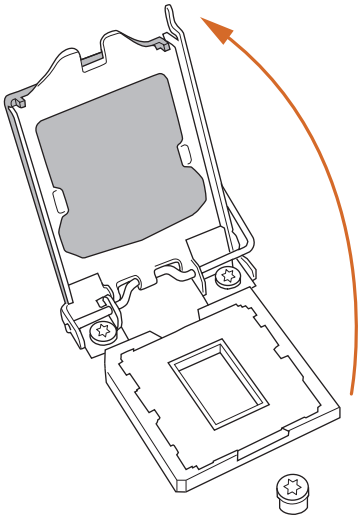

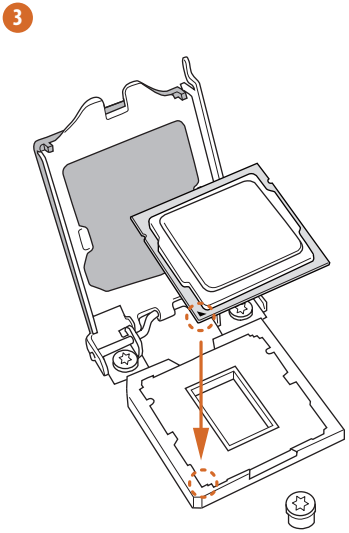
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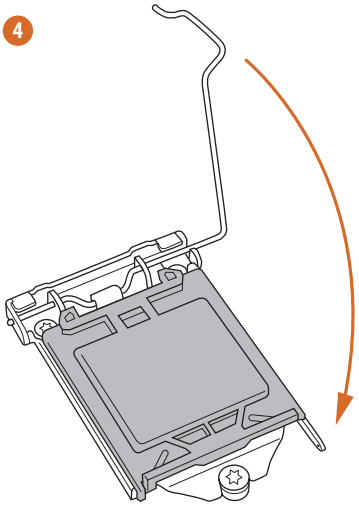
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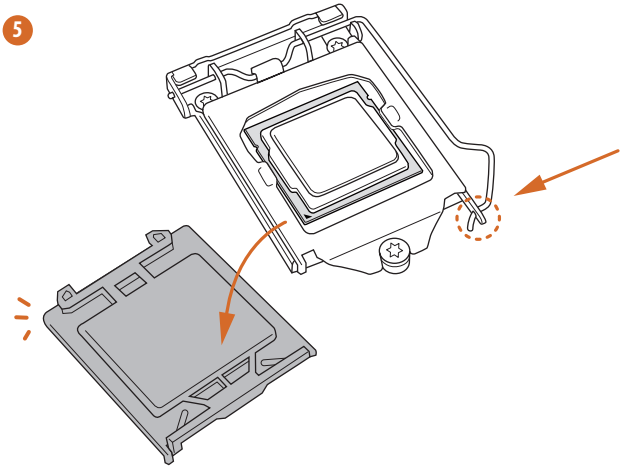
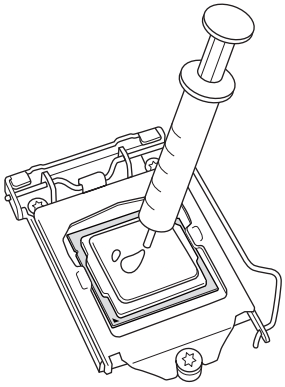
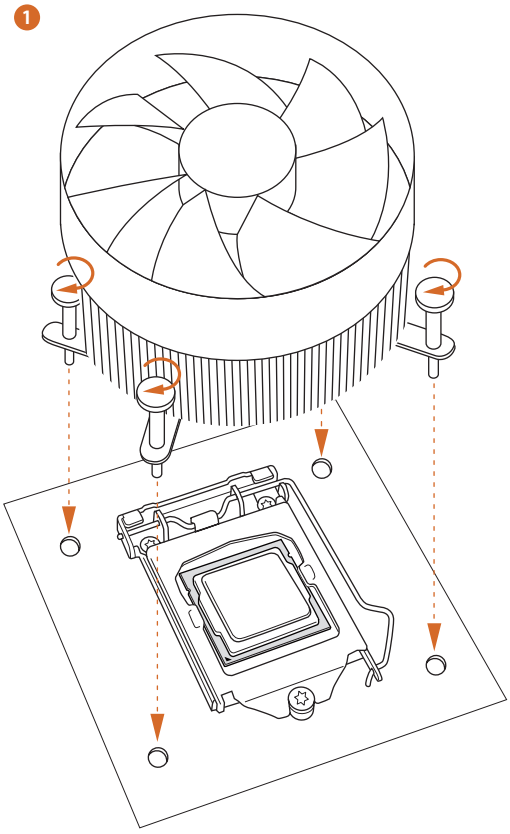
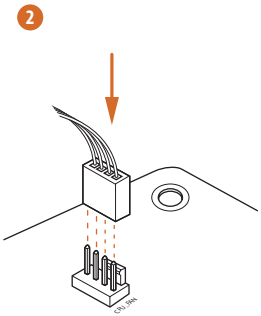

5

Please save and replace the cover if the processor is removed. The cover must be placed if you wish to return the motherboard for after service.

2.2 Installing the CPU Fan and Heatsink







2.3 Installing Memory Modules (DIMM)

This motherboard provides four 240-pin DDR3 (Double Data Rate 3) DIMM slots, and supports Dual Channel Memory Technology.

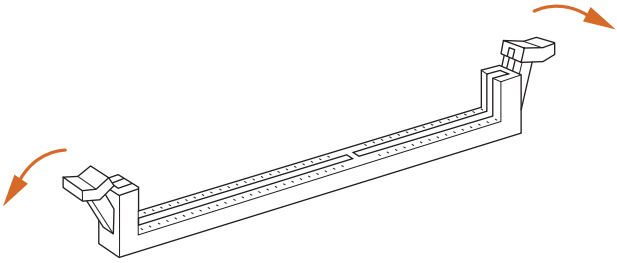
1. *For dual channel configuration, you always need to install identical (the same brand, speed, size and chip-type) DDR3 DIMM pairs.*
2. *It is unable to activate Dual Channel Memory Technology with only one or three memory module installed.*
3. *It is not allowed to install a DDR or DDR2 memory module into a DDR3 slot; otherwise, this motherboard and DIMM may be damaged.*

Dual Channel Memory Configuration

Priority	DDR3_A1	DDR3_A2	DDR3_B1	DDR3_B2
1		Populated		Populated
2	Populated		Populated	
3	Populated	Populated	Populated	Populated

The DIMM only fits in one correct orientation. It will cause permanent damage to the motherboard and the DIMM if you force the DIMM into the slot at incorrect orientation.

1



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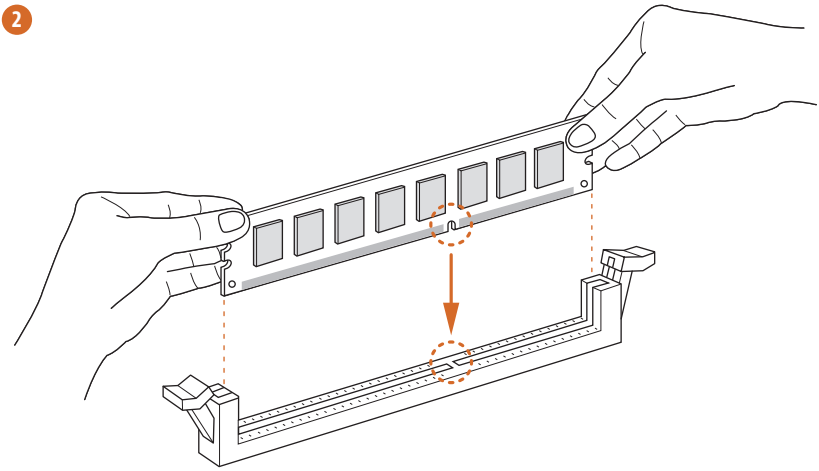

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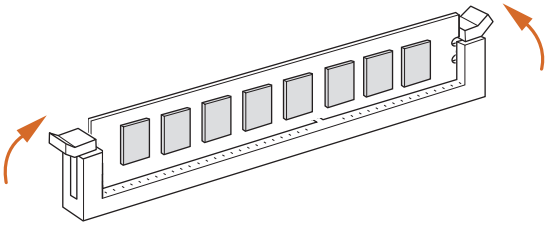


2.4 Expansion Slots (PCI Express Slots)

There are 5 PCI Express slots and 1 mini-PCI Express slot on the motherboard.

Before installing an expansion card, please make sure that the power supply is switched off or the power cord is unplugged. Please read the documentation of the expansion card and make necessary hardware settings for the card before you start the installation.

PCIe slots:

PCIE1 (PCIe 3.0 x16 slot) is used for PCI Express x16 lane width graphics cards.
PCIE2 (PCIe 3.0 x16 slot) is used for PCI Express x8 lane width graphics cards.
PCIE3 (PCIe 2.0 x16 slot) is used for PCI Express x2 lane width cards.
PCIE4 (PCIe 3.0 x16 slot) is used for PCI Express x16 lane width graphics cards.
PCIE5 (PCIe 3.0 x16 slot) is used for PCI Express x8 lane width graphics cards.

mini-PCIe slot:

MINI_PCIE1 (mini-PCIe slot) is used for WiFi module.

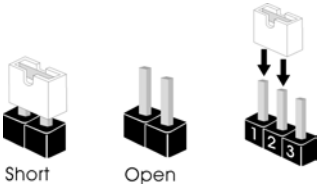
PCIe Slot Configurations

	PCIE1	PCIE2	PCIE4	PCIE5
Single Graphics Card	x16	N/A	N/A	N/A
Two Graphics Cards in CrossFireX™ or SLI™ Mode	x16	N/A	x16	N/A
Three Graphics Cards in 3-Way CrossFireX™ or 3-Way SLI™ Mode	x8	x8	x16	N/A
Four Graphics Cards in 4-Way CrossFireX™ or 4-Way SLI™ Mode	x8	x8	x8	x8

For a better thermal environment, please connect a chassis fan to the motherboard's chassis fan connector (CHA_FAN1, CHA_FAN2 or CHA_FAN3) when using multiple graphics cards.

2.5 Jumpers Setup

The illustration shows how jumpers are setup. When the jumper cap is placed on the pins, the jumper is "Short". If no jumper cap is placed on the pins, the jumper is "Open". The illustration shows a 3-pin jumper whose pin1 and pin2 are "Short" when a jumper cap is placed on these 2 pins.



Clear CMOS Jumper (CLRCMOS1) (see p.7, No. 32)	1_2 Default	2_3 Clear CMOS

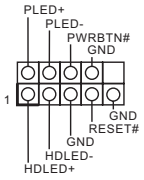
CLRCMOS1 allows you to clear the data in CMOS. To clear and reset the system parameters to default setup, please turn off the computer and unplug the power cord from the power supply. After waiting for 15 seconds, use a jumper cap to short pin2 and pin3 on CLRCMOS1 for 5 seconds. However, please do not clear the CMOS right after you update the BIOS. If you need to clear the CMOS when you just finish updating the BIOS, you must boot up the system first, and then shut it down before you do the clear-CMOS action. Please be noted that the password, date, time, and user default profile will be cleared only if the CMOS battery is removed.

The Clear CMOS Switch has the same function as the Clear CMOS jumper.

2.6 Onboard Headers and Connectors

Onboard headers and connectors are NOT jumpers. Do NOT place jumper caps over these headers and connectors. Placing jumper caps over the headers and connectors will cause permanent damage to the motherboard.

System Panel Header
(9-pin PANEL1)
(see p.7, No. 27)



Connect the power switch, reset switch and system status indicator on the chassis to this header according to the pin assignments below. Note the positive and negative pins before connecting the cables.

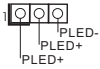
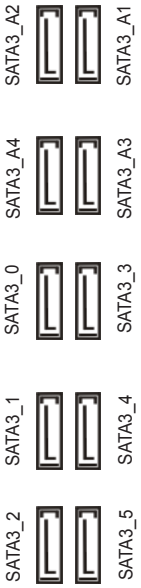
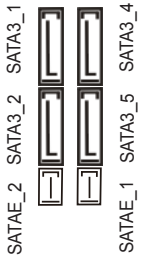
PWRBTN (Power Switch):
Connect to the power switch on the chassis front panel. You may configure the way to turn off your system using the power switch.

RESET (Reset Switch):
Connect to the reset switch on the chassis front panel. Press the reset switch to restart the computer if the computer freezes and fails to perform a normal restart.

PLED (System Power LED):
Connect to the power status indicator on the chassis front panel. The LED is on when the system is operating. The LED keeps blinking when the system is in S1/S3 sleep state. The LED is off when the system is in S4 sleep state or powered off (S5).

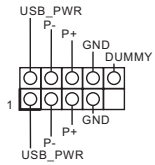
HDLED (Hard Drive Activity LED):
Connect to the hard drive activity LED on the chassis front panel. The LED is on when the hard drive is reading or writing data.

The front panel design may differ by chassis. A front panel module mainly consists of power switch, reset switch, power LED, hard drive activity LED, speaker and etc. When connecting your chassis front panel module to this header, make sure the wire assignments and the pin assignments are matched correctly.

Power LED Header (3-pin PLED1) (see p.7, No. 28)		Please connect the chassis power LED to this header to indicate the system's power status.
Serial ATA3 Connectors (SATA3_0: see p.7, No. 16) (SATA3_1: see p.7, No. 18) (SATA3_2: see p.7, No. 20) (SATA3_3: see p.7, No. 17) (SATA3_4: see p.7, No. 19) (SATA3_5: see p.7, No. 21) (SATA3_A1: see p.7, No. 13) (SATA3_A2: see p.7, No. 12) (SATA3_A3: see p.7, No. 15) (SATA3_A4: see p.7, No. 14)		These ten SATA3 connectors support SATA data cables for internal storage devices with up to 6.0 Gb/s data transfer rate. If the eSATA port on the rear I/O has been connected, the internal SATA3_A4 will not function. The SATA3_1, SATA3_2 are shared with the SATA Express connector (SATAE_2). The SATA3_4, SATA3_5 are shared with the SATA Express connector (SATAE_1). To minimize the boot time, use Intel® Z97 SATA ports (SATA3_0) for your bootable devices.
Serial ATA Express Connectors (SATAE_1: see p.7, No. 23) (SATAE_2: see p.7, No. 22)		Please connect either SATA or PCIe storage devices to this connector. The lower SATA Express connector (the combination of SATAE_1, SATA3_4, and SATA3_5) is shared with the M.2 Socket (M2_2).

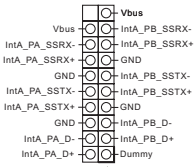
English

USB 2.0 Headers
(9-pin USB4_5)
(see p.7, No. 34)
(9-pin USB6_7)
(see p.7, No. 33)



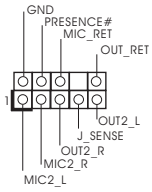
There are two headers and on this motherboard. Each USB 2.0 header can support two ports.

USB 3.0 Headers
(19-pin USB3_5_6)
(see p.7, No. 10)
(19-pin USB3_7_8)
(see p.7, No. 11)



Besides four USB 3.0 ports on the I/O panel, there are two headers on this motherboard. Each USB 3.0 header can support two ports.

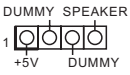
Front Panel Audio Header
(9-pin HD_AUDIO1)
(see p.7, No. 38)



This header is for connecting audio devices to the front audio panel.

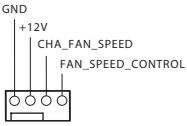
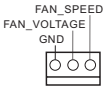
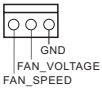
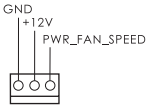
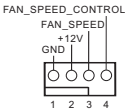
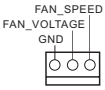
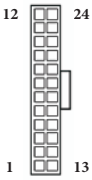
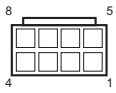
1. *High Definition Audio supports Jack Sensing, but the panel wire on the chassis must support HDA to function correctly. Please follow the instructions in our manual and chassis manual to install your system.*
2. *If you use an AC'97 audio panel, please install it to the front panel audio header by the steps below:*
   A. Connect Mic_IN (MIC) to MIC2_L.
   B. Connect Audio_R (RIN) to OUT2_R and Audio_L (LIN) to OUT2_L.
   C. Connect Ground (GND) to Ground (GND).
   D. MIC_RET and OUT_RET are for the HD audio panel only. You don't need to connect them for the AC'97 audio panel.
   E. To activate the front mic, go to the "FrontMic" Tab in the Realtek Control panel and adjust "Recording Volume".

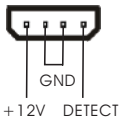
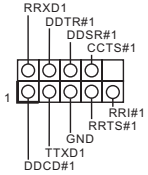
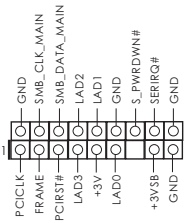
Chassis Speaker Header
(4-pin SPEAKER1)
(see p.7, No. 29)



Please connect the chassis speaker to this header.

English

Chassis and Power Fan Connectors (4-pin CHA_FAN1) (see p.7, No. 31)		Please connect fan cables to the fan connectors and match the black wire to the ground pin.
(3-pin CHA_FAN2) (see p.7, No. 40)		
(3-pin CHA_FAN3) (see p.7, No. 1)		
(3-pin PWR_FAN1) (see p.7, No. 6)		
CPU Fan Connectors (4-pin CPU_FAN1) (see p.7, No. 4)		This motherboard provides a 4-Pin CPU fan (Quiet Fan) connector. If you plan to connect a 3-Pin CPU fan, please connect it to Pin 1-3.
(3-pin CPU_FAN2) (see p.7, No. 5)		
ATX Power Connector (24-pin ATXPWR1) (see p.7, No. 9)		This motherboard provides a 24-pin ATX power connector. To use a 20-pin ATX power supply, please plug it along Pin 1 and Pin 13.
ATX 12V Power Connectors (8-pin ATX12V1) (see p.7, No. 2) (8-pin ATX12V2) (see p.7, No. 3)		This motherboard provides an 8-pin ATX 12V power connector. To use a 4-pin ATX power supply, please plug it along Pin 1 and Pin 5.

PCIe Power Connector (4-pin PCIE_PWR1) (see p.7, No. 36)		Please connect a 4 pin molex power cable to this connector when more than three graphics cards are installed.
HDD Saver Connector (4-pin SATA_PWR_1) (see p.7, No. 24)		Please connect the HDD Saver Cable to this connector to manage the power state of HDD.
Thunderbolt AIC Connector (5-pin TB1) (see p.7, No. 35)		Please connect a Thunderbolt™ add-in card (AIC) to this connector via the GPIO cable.
Serial Port Header (9-pin COM1) (see p.7, No. 37)		This COM1 header supports a serial port module.
TPM Header (17-pin TPMS1) (see p.7, No. 39)		This connector supports Trusted Platform Module (TPM) system, which can securely store keys, digital certificates, passwords, and data. A TPM system also helps enhance network security, protects digital identities, and ensures platform integrity.

2.7 Smart Switches

The motherboard has four smart switches: Power Switch, Reset Switch, Clear CMOS Switch and one BIOS Selection Switch, allowing users to quickly turn on/off the system, reset the system, clear the CMOS values or boot from different BIOS.

Power Switch (PWRBTN) (see p.7, No. 25)		Power Switch allows users to quickly turn on/off the system.
Reset Switch (RSTBTN) (see p.7, No. 26)		Reset Switch allows users to quickly reset the system.
Clear CMOS Switch (CLRCBTN) (see p.10, No. 16)		Clear CMOS Switch allows users to quickly clear the CMOS values.

This function is workable only when you power off your computer and unplug the power supply.

BIOS Selection Switch (BIOS_SEL1) (see p.7 No. 30)		BIOS Selection Switch allows the system to boot from either BIOS A or BIOS B.

This motherboard has two BIOS chips, a primary BIOS (BIOS_A) and a backup BIOS (BIOS_B), which enhances the safety and stability of your system. Normally, the system will work on the primary BIOS. However, if the primary BIOS is corrupted or damaged, just flip the BIOS Selection Switch to "B", then the backup BIOS will take over on the next system boot. After that, use "Secure Backup UEFI" in the UEFI Setup Utility to duplicate a working copy of the BIOS files to the primary BIOS to ensure normal system operation. For safety issues, users are not able to update the backup BIOS manually. Users may refer to the BIOS LEDs (BIOS_A_LED or BIOS_B_LED) to identify which BIOS is currently activated.

2.8 Dr. Debug

Dr. Debug is used to provide code information, which makes troubleshooting even easier. Please see the diagrams below for reading the Dr. Debug codes.

Code	Description
00	Please check if the CPU is installed correctly and then clear CMOS.
0d	Problem related to memory, VGA card or other devices. Please clear CMOS, re-install the memory and VGA card, and remove other USB, PCI devices.
01 - 54 (except 0d), 5A- 60	Problem related to memory. Please re-install the CPU and memory then clear CMOS. If the problem still exists, please install only one memory module or try using other memory modules.
55	The Memory could not be detected. Please re-install the memory and CPU. If the problem still exists, please install only one memory module or try using other memory modules.
61 - 91	Chipset initialization error. Please press reset or clear CMOS.
92 - 99	Problem related to PCI-E devices. Please re-install PCI-E devices or try installing them in other slots. If the problem still exists, please remove all PCI-E devices or try using another VGA card.
A0 - A7	Problem related to IDE or SATA devices. Please re-install IDE and SATA devices. If the problem still exists, please clear CMOS and try removing all SATA devices.
b0	Problem related to memory. Please re-install the CPU and memory. If the problem still exists, please install only one memory module or try using other memory modules.

b4	Problem related to USB devices. Please try removing all USB devices.
b7	Problem related to memory. Please re-install the CPU and memory then clear CMOS. If the problem still exists, please install only one memory module or try using other memory modules.
d6	The VGA could not be recognized. Please clear CMOS and try re-installing the VGA card. If the problem still exists, please try installing the VGA card in other slots or use other VGA cards.
d7	The Keyboard and mouse could not be recognized. Please try re-installing the keyboard and mouse.
d8	Invalid Password.
FF	Please check if the CPU is installed correctly and then clear CMOS.

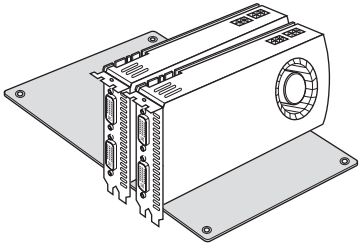
2.9 SLI™ , 3-Way SLI™ , 4-Way SLI™ and Quad SLI™ Operation Guide

This motherboard supports NVIDIA® SLI™ , 3-way SLI™, 4-way SLI™ and Quad SLI™ (Scalable Link Interface) technology that allows you to install up to four identical PCI Express x16 graphics cards. Currently, NVIDIA® SLI™ and Quad SLI™ technology supports Windows® 7 / 7 64-bit / 8 / 8 64-bit / 8.1 / 8.1 64-bit OS.

Requirements

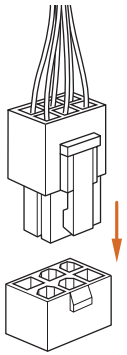
1. *You should only use identical SLI™-ready graphics cards that are NVIDIA® certified.*
2. *Make sure that your graphics card driver supports NVIDIA® SLI™ technology. Download the drivers from the NVIDIA® website: www.nvidia.com*
3. *Make sure that your power supply unit (PSU) can provide at least the minimum power your system requires. It is recommended to use a NVIDIA® certified PSU. Please refer to the NVIDIA® website for details.*

2.9.1 Installing Two SLI™-Ready Graphics Cards



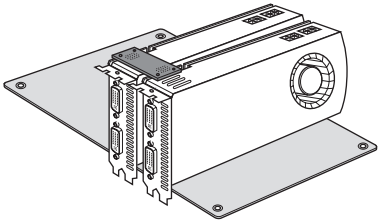
Step 1

Insert one graphics card into PCIE1 slot and the other graphics card to PCIE4 slot. Make sure that the cards are properly seated on the slots.



Step 2

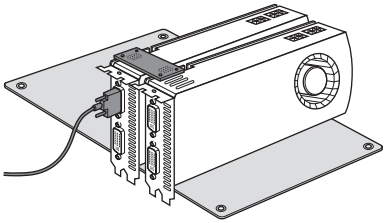
If required, connect the auxiliary power source to the PCI Express graphics cards.



Step 3

Align and insert the ASRock SLI_Bridge_3S Card to the goldfingers on each graphics card. Make sure the ASRock SLI_Bridge_3S Card is firmly in place.

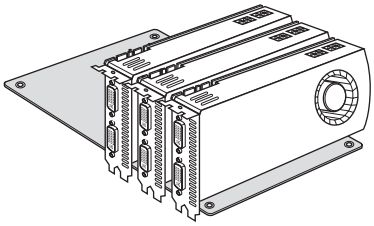
ASRock SLI_Bridge_3S Card



Step 4

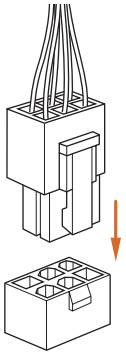
Connect a VGA cable or a DVI cable to the monitor connector or the DVI connector of the graphics card that is inserted to PCIE1 slot.

2.9.2 Installing Three SLI™-Ready Graphics Cards



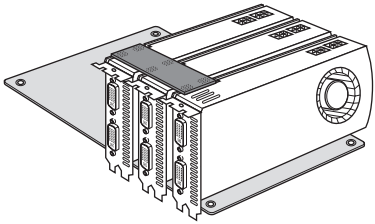
Step 1

Insert one graphics card into PCIE1 slot, another graphics card to PCIE2 slot, and the other graphics card to PCIE4 slot. Make sure that the cards are properly seated on the slots.



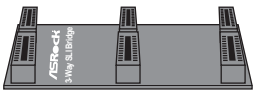
Step 2

Connect the auxiliary power source to the PCI Express graphics card. Please make sure that both power connectors on the PCI Express graphics card are connected. Repeat this step on the three graphics cards.

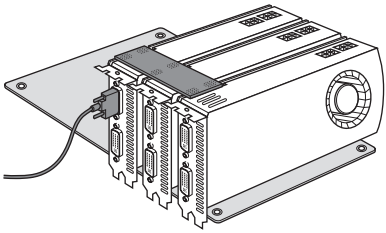


Step 3

Align and insert the ASRock 3-Way SLI Bridge Card to the goldfingers on each graphics card. Make sure the ASRock 3-Way SLI Bridge Card is firmly in place.



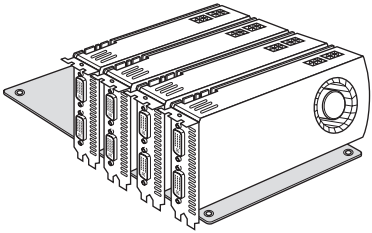
ASRock 3-Way SLI Bridge Card



Step 4

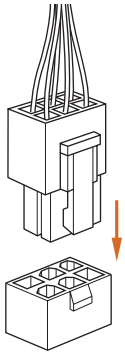
Connect a VGA cable or a DVI cable to the monitor connector or the DVI connector of the graphics card that is inserted to PCIE1 slot.

2.9.3 Installing Four SLI™-Ready Graphics Cards



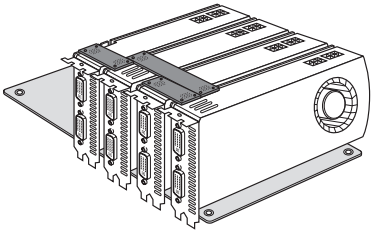
Step 1

Insert one graphics card into the PCIE1 slot, another graphics card into the PCIE2 slot, the third graphics card into the PCIE4 slot and the last graphics card into the PCIE5 slot. Make sure that the cards are properly seated on the slots.



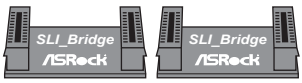
Step 2

Connect the auxiliary power source to the PCI Express graphics card. Please make sure that both power connectors on the PCI Express graphics card are connected. Repeat this step on the three graphics cards.



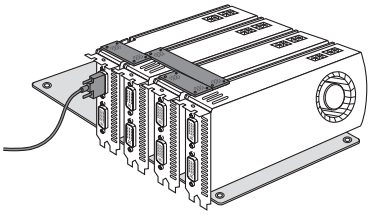
Step 3

Align and insert an ASRock SLI Bridge Card to the goldfingers of the first and second graphics card. Install the second ASRock SLI Bridge Card to the goldfingers of the third and fourth graphics card. Connect the second and the fourth graphics card with the ASRock SLI_Bridge_3S Card. Make sure the ASRock SLI Bridge Cards are firmly in place.



2 ASRock SLI_Bridge Cards
and an ASRock SLI_Bridge_3S Card

English



Step 4

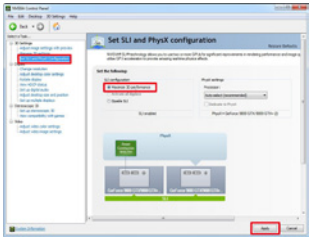
Connect a VGA cable or a DVI cable to the monitor connector or the DVI connector of the graphics card that is inserted to PCIE1 slot.

2.9.4 Driver Installation and Setup

Install the graphics card drivers to your system. After that, you can enable the Multi-Graphics Processing Unit (GPU) in the NVIDIA® nView system tray utility. Please follow the below procedures to enable the multi-GPU.

Step 1

Double-click the **NVIDIA Control Panel** icon in the Windows® system tray.



Step 2

In the left pane, click **Set SLI and PhysX configuration**. Then select **Maximize 3D performance** and click **Apply**.

Step 3

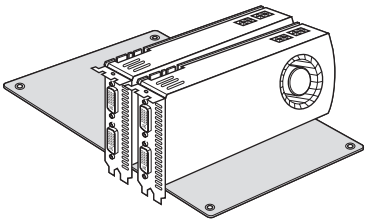
Reboot your system.

2.10 CrossFireX™, 3-Way CrossFireX™, 4-Way CrossFireX™ and Quad CrossFireX™ Operation Guide

This motherboard supports CrossFireX™, 3-way CrossFireX™, 4-way CrossFireX™ and Quad CrossFireX™ that allows you to install up to four identical PCI Express x16 graphics cards. Currently CrossFireX™, 3-way CrossFireX™ and Quad CrossFireX™ are supported with Windows® 7 / 7 64-bit / 8 / 8 64-bit / 8.1 / 8.1 64-bit OS.

1. *You should only use identical CrossFireX™-ready graphics cards that are AMD certified.*
2. *Make sure that your graphics card driver supports AMD CrossFireX™ technology. Download the drivers from the AMD's website: www.amd.com*
3. *Make sure that your power supply unit (PSU) can provide at least the minimum power your system requires. It is recommended to use a AMD certified PSU. Please refer to the AMD's website for details.*
4. *If you pair a 12-pipe CrossFireX™ Edition card with a 16-pipe card, both cards will operate as 12-pipe cards while in CrossFireX™ mode.*
5. *Different CrossFireX™ cards may require different methods to enable CrossFireX™. Please refer to AMD graphics card manuals for detailed installation guide.*

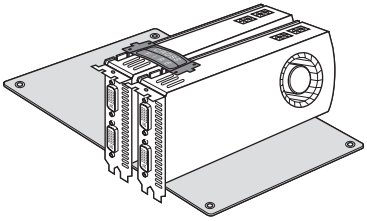
2.10.1 Installing Two CrossFireX™-Ready Graphics Cards



Step 1

Insert one graphics card into PCIE1 slot and the other graphics card to PCIE4 slot. Make sure that the cards are properly seated on the slots.

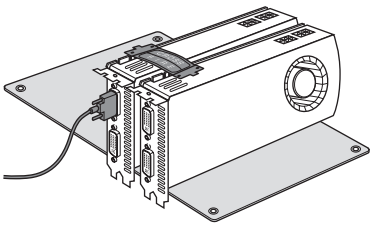
CrossFire Bridge



Step 2

Connect two graphics cards by installing a CrossFire Bridge on the CrossFire Bridge Interconnects on the top of the graphics cards. (The CrossFire Bridge is provided with the graphics card you purchase, not bundled with this motherboard. Please refer to your graphics card vendor for details.)

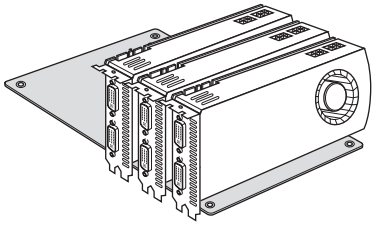
English



Step 3

Connect a VGA cable or a DVI cable to the monitor connector or the DVI connector of the graphics card that is inserted to PCIE1 slot.

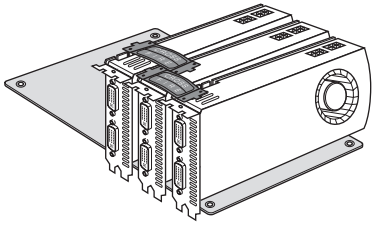
2.10.2 Installing Three CrossFireX™-Ready Graphics Cards



Step 1

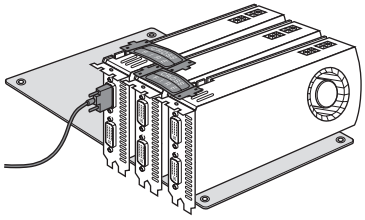
Insert one graphics card into PCIE1 slot, another graphics card to PCIE2 slot, and the other graphics card to PCIE4 slot. Make sure that the cards are properly seated on the slots.

CrossFire Bridge



Step 2

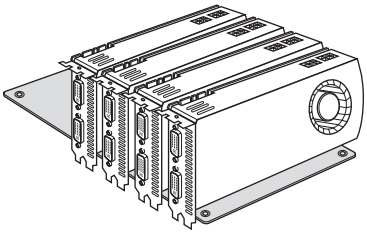
Use one CrossFire Bridge to connect the graphics cards on PCIE1 and PCIE2 slots, and use the other CrossFire Bridge to connect the graphics cards on PCIE2 and PCIE4 slots. (The CrossFire Bridge is provided with the graphics card you purchase, not bundled with this motherboard. Please refer to your graphics card vendor for details.)



Step 3

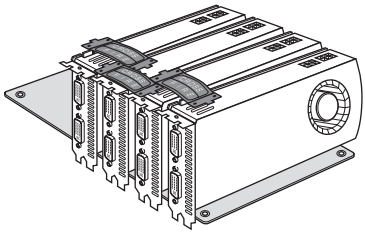
Connect a VGA cable or a DVI cable to the monitor connector or the DVI connector of the graphics card that is inserted to PCIE1 slot.

2.10.3 Installing Four CrossFireX™-Ready Graphics Cards



Step 1

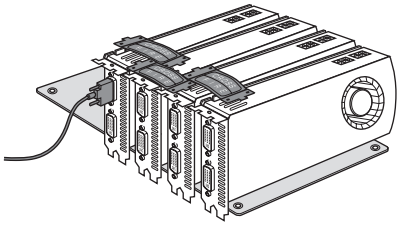
Insert one graphics card into PCIE1 slot, another graphics card into PCIE2 slot, the third graphics card into PCIE4 slot and the last graphics card into PCIE5 slot. Make sure that the cards are properly seated on the slots.



CrossFire Bridge

Step 2

Use one CrossFire Bridge to connect the graphics cards on PCIE1 and PCIE2 slots, another CrossFire Bridge to connect the graphics cards on PCIE2 and PCIE4 slots, and use the third CrossFire Bridge to connect the Radeon graphics cards on PCIE4 and PCIE5 slots. (The CrossFire Bridge is provided with the graphics card you purchase, not bundled with this motherboard. Please refer to your graphics card vendor for details.)



Step 3

Connect a VGA cable or a DVI cable to the monitor connector or the DVI connector of the graphics card that is inserted to PCIE1 slot.

2.10.4 Driver Installation and Setup

Step 1

Power on your computer and boot into OS.

Step 2

Remove the AMD drivers if you have any VGA drivers installed in your system.

The Catalyst Uninstaller is an optional download. We recommend using this utility to uninstall any previously installed Catalyst drivers prior to installation. Please check AMD's website for AMD driver updates.

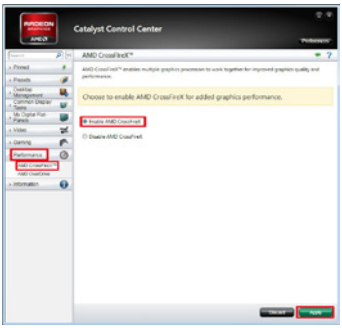
Step 3

Install the required drivers and CATALYST Control Center then restart your computer. Please check AMD's website for details.

AMD Catalyst Control Center

Step 4

Double-click the **AMD Catalyst Control Center** icon in the Windows® system tray.



Step 5

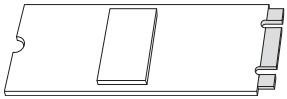
In the left pane, click **Performance** and then **AMD CrossFireX™**. Then select **Enable AMD CrossFireX** and click **Apply**. Select the GPU number according to your graphics card and click **Apply**.

2.11 M.2_SSD (NGFF) Module Installation Guide

The M.2, also known as the Next Generation Form Factor (NGFF), is a small size and versatile card edge connector that aims to replace mPCIe and mSATA. The Ultra M.2 Socket (M2_1), supports M.2 PCI Express module up to Gen3 x4 (32 Gb/s). The M.2_SSD (NGFF) Socket 3 (M2_2) can accommodate either a M.2 SATA3 6.0 Gb/s module or a M.2 PCI Express module up to Gen 2 x2 (10 Gb/s). Please be noted that the M.2_SSD (NGFF) Socket 3 (M2_2) is shared with the SATA Express connector (SATAE_1); you can only choose either the M.2_SSD (NGFF) Socket 3 (M2_2) or the SATA Express connector (SATAE_1) to use.

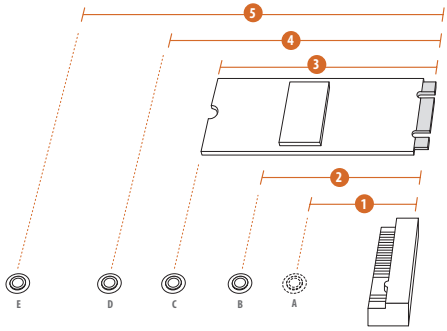
*The M.2_SSD (NGFF) Socket 3 supports SSD drives. Please note that the WiFi or other non-SSD M.2 modules are not supported.

Installing the M.2_SSD (NGFF) Module



Step 1

Prepare a M.2_SSD (NGFF) module and the screw.

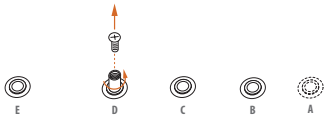


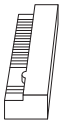
Step 2

Depending on the PCB type and length of your M.2_SSD (NGFF) module, find the corresponding nut location to be used.

No.	1	2	3	4	5
Nut Location	A	B	C	D	E
PCB Length	3cm	4.2cm	6cm	8cm	11cm
Module Type	Type2230	Type 2242	Type2260	Type 2280	Type 22110

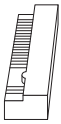
English





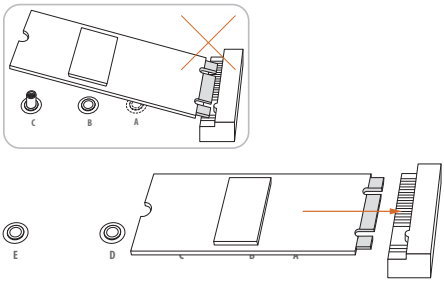
Step 3

Move the standoff based on the module type and length.
The standoff is placed at the nut location D by default. Skip Step 3 and 4 and go straight to Step 5 if you are going to use the default nut. Otherwise, release the standoff by hand.



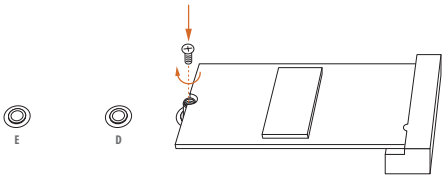
Step 4

Peel off the yellow protective film on the nut to be used. Hand tighten the standoff into the desired nut location on the motherboard.



Step 5

Align and gently insert the M.2 (NGFF) SSD module into the M.2 slot. Please be aware that the M.2 (NGFF) SSD module only fits in one orientation.



Step 6

Tighten the screw with a screwdriver to secure the module into place. Please do not overtighten the screw as this might damage the module.

M.2_SSD (NGFF) Module Support List

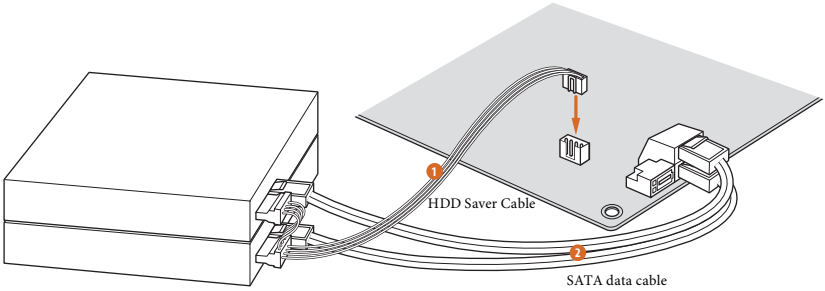
PCIe Interface	SATA Interface
Plextor PX-G256M6e	ADATA AXNS381E-128GM-B
Plextor PX-G512M6e	ADATA AXNS381E-256GM-B
SanDisk SD6PP4M-128G	Crucial CT120M500SSD4/120G
SanDisk SD6PP4M-256G	Crucial CT240M500SSD4/240G
Samsung XP941-512G (MZHPU512HCGL)	Intel SSDSCKGW080A401/80G
	Kingston RBU-SNS8400S3/180GD

For the latest updates of M.2_SSD (NFGG) module support list, please visit our website for details: http://www.asrock.com

2.12 HDD Saver Cable Installation Guide

The HDD Saver Connector on this motherboard allows you to switch on and off the connected HDDs via software when needed. This design secures more privacy, saves more energy, and extends the HDDs' lifespans. Please follow the steps below to install the HDD Saver Cable.

Connection Diagram



*The diagram shown here is for reference only.

1. Connect one end of the HDD Saver Cable to the **HDD Saver Connector (SATA_PWR_1)** placed near the SATA ports. Then connect the SATA power connector(s) to your SATA HDD(s).
   * The HDD Saver Connector supports up to two SATA HDDs.

2. Connect one end of the SATA data cable to a SATA port on the motherboard. Then connect the other end to your SATA HDD(s).

For the software configuration, please refer to the section 3.2 "A-Tuning" in this user manual.

2.13 Dual LAN and Teaming Operation Guide

Dual LAN with Teaming enabled on this motherboard allows two single connections to act as one single connection for twice the transmission bandwidth, making data transmission more effective and improving the quality of transmission of distant images. Fault tolerance on the dual LAN network prevents network downtime by transferring the workload from a failed port to a working port.

The speed of transmission is subject to the actual network environment or status even with Teaming enabled.

Before setting up Teaming, please make sure whether your Switch (or Router) supports Teaming (IEEE 802.3ad Link Aggregation). You can specify a preferred adapter in Intel PROSet. Under normal conditions, the Primary adapter handles all non-TCP/IP traffic. The Secondary adapter will receive fallback traffic if the primary fails. If the Preferred Primary adapter fails, but is later restored to an active status, control is automatically switched back to the Preferred Primary adapter.

Step 1

From **Device Manager**, open the properties of a team.

Step 2

Click the **Settings** tab.

Step 3

Click the **Modify Team** button.

Step 4

Select the adapter you want to be the primary adapter and click the **Set Primary** button.

If you do not specify a preferred primary adapter, the software will choose an adapter of the highest capability (model and speed) to act as the default primary. If a failover occurs, another adapter becomes the primary. The adapter will, however, rejoin the team as a non-primary.

Chapter 3 Software and Utilities Operation

3.1 Installing Drivers

The Support CD that comes with the motherboard contains necessary drivers and useful utilities that enhance the motherboard's features.

Running The Support CD

To begin using the support CD, insert the CD into your CD-ROM drive. The CD automatically displays the Main Menu if "AUTORUN" is enabled in your computer. If the Main Menu does not appear automatically, locate and double click on the file "ASRSETUP.EXE" in the Support CD to display the menu.

Drivers Menu

The drivers compatible to your system will be auto-detected and listed on the support CD driver page. Please click **Install All** or follow the order from top to bottom to install those required drivers. Therefore, the drivers you install can work properly.

Utilities Menu

The Utilities Menu shows the application software that the motherboard supports. Click on a specific item then follow the installation wizard to install it.

To improve Windows 7 compatibility, please download and install the following hot fix provided by Microsoft.
"KB2720599": http://support.microsoft.com/kb/2720599/en-us

3.2 A-Tuning

A-Tuning is ASRock's multi purpose software suite with a new interface, more new features and improved utilities, including XFast RAM, Dehumidifier, Good Night LED, FAN-Tastic Tuning, OC Tweaker and a whole lot more.

3.2.1 Installing A-Tuning

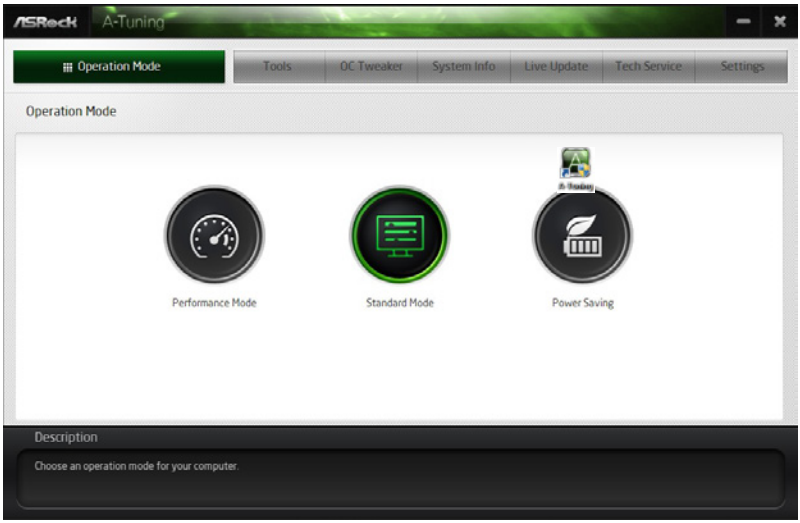
When you install the all-in-one driver to your system from ASRock's support CD, A-Tuning will be auto-installed as well. After the installation, you will find the icon "A-Tuning" on your desktop. Double-click the "A-Tuning" icon, A-Tuning main menu will pop up.

3.2.2 Using A-Tuning

There are six sections in A-Tuning main menu: Operation Mode, Tools, OC Tweaker, System Info, Live Update, Tech Service and Settings.

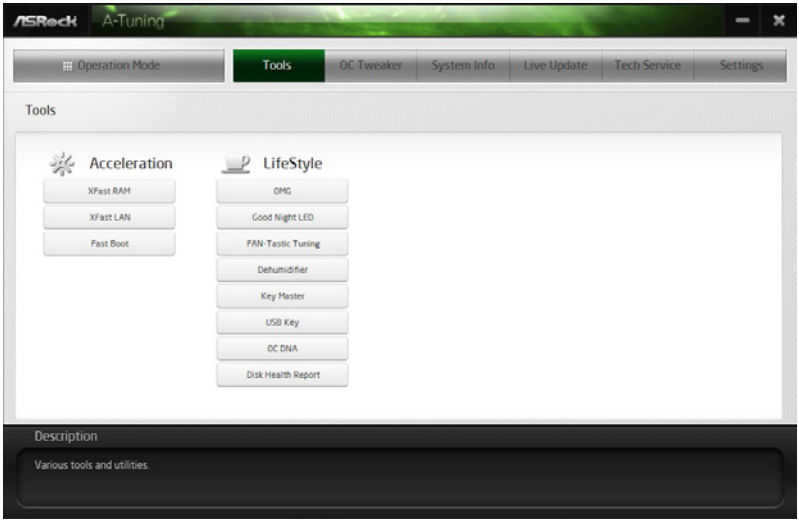
Operation Mode

Choose an operation mode for your computer.



Tools

Various tools and utilities.



XFast RAM

Boost the system's performance and extend the HDD's or SDD's lifespan! Create a hidden partition, then assign which files should be stored in the RAM drive.

XFast LAN

Boost the speed of your internet connection! Select a specific mode for making the designated program's priority highest.

Fast Boot

Fast Boot minimizes your computer's boot time. Please note that Ultra Fast mode is only supported by Windows 8.1/8 and the VBIOS must support UEFI GOP if you are using an external graphics card.

OMG

Schedule the starting and ending hours of Internet access granted to other users. Place X marks on the time table to disable the Internet.

Good Night LED

Switch off the Power/HDD LEDs when the system is on, and automatically switch off the Power and Keyboard LEDs when the system enters into Standby/Hibernation mode.

FAN-Tastic Tuning

Configure up to five different fan speeds using the graph. The fans will automatically shift to the next speed level when the assigned temperature is met.

Dehumidifier

Prevent motherboard damages due to dampness. Enable this function and configure the period of time until the computer powers on, and the duration of the dehumidifying process.

USB Key

Plug in the USB Key and let your computer log in to windows automatically!

OC DNA

OC DNA is an unique software which helps to save your OC settings as a profile. Then you can send this OC setting profile to the friends.

HDD Saver

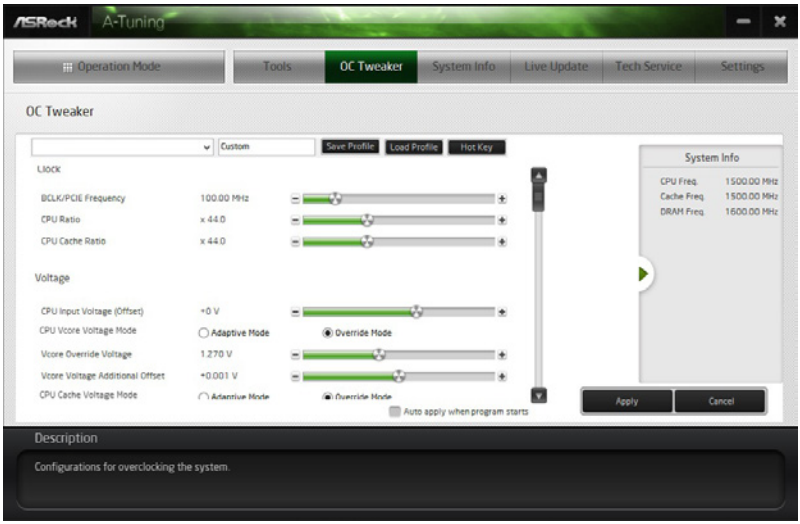
A quick-and-easy way to power up and down the drive on demand. Use a customized hotkey (Ctrl + Alt + S, by default) or simply slide to turn on and off up to two internal SATA HDDs connected to the power supply connector. Also a password can be set to change HDD power mode for more privacy and safety.

Disk Health Report

Disk Health Report is a hard disk health monitoring utility that displays detailed HDD information, such as hard disk model, serial number, firmware, power on count, power on hours, S.M.A.R.T. values, current temperature, etc. HDD, SSD and optical disk drives are all supported. The health status block displays Good (in green color), Caution (in yellow color) or Bad (in red color). Click on the health status icon to configure settings for an alert to be triggered.

OC Tweaker

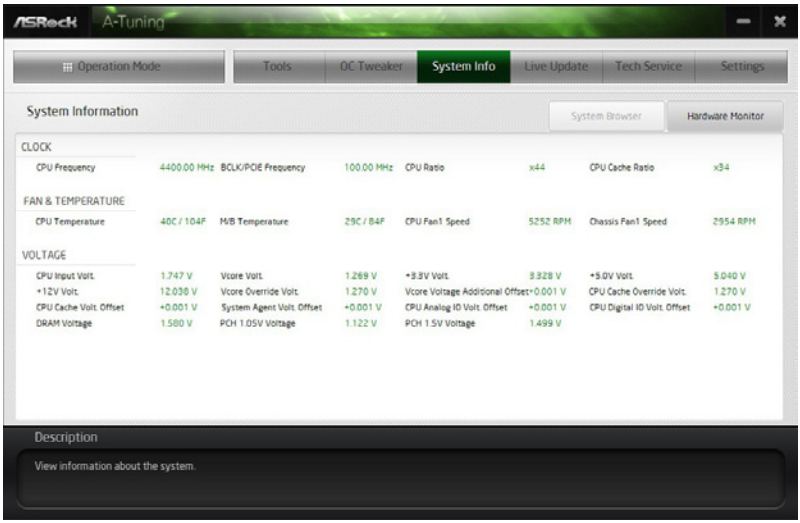
Configurations for overclocking the system.



System Info

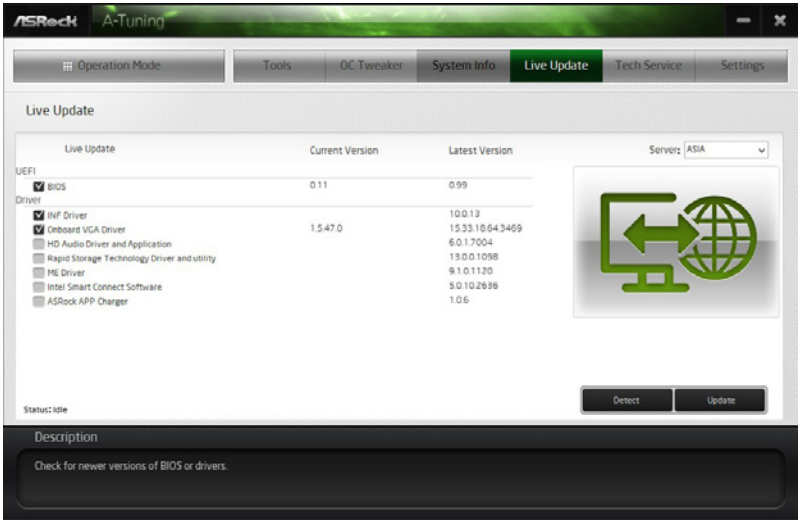
View information about the system.

*The System Browser tab may not appear for certain models.



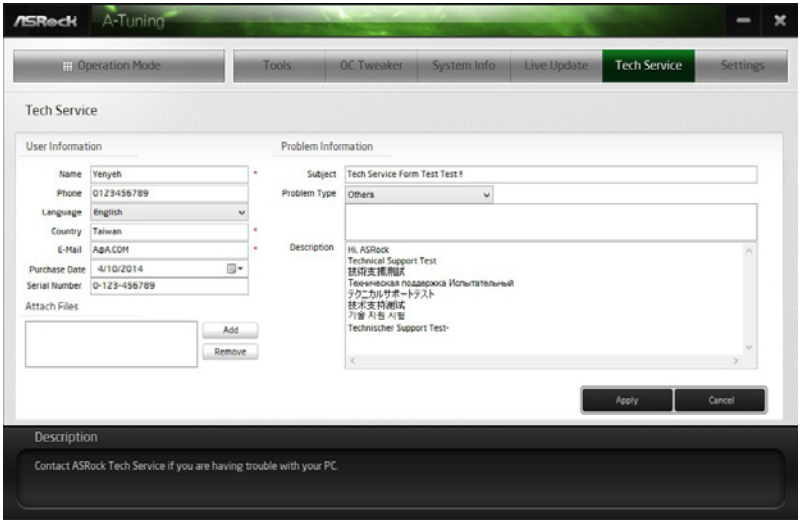
Live Update

Check for newer versions of BIOS or drivers.



Tech Service

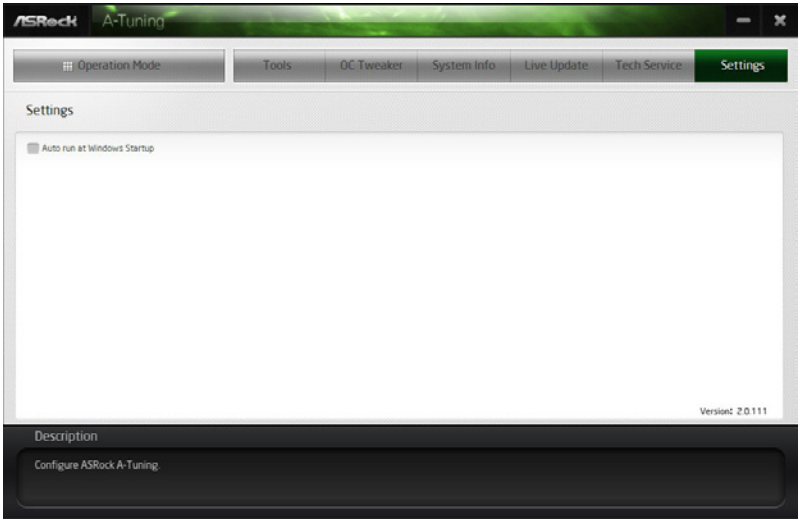
Contact Tech Service if you have problems with your computer. Please leave your contact information along with details of the problem.



English

Settings

Configure ASRock A-Tuning. Click to select "Auto run at Windows Startup" if you want A-Tuning to be launched when you start up the Windows operating system.



3.3 Intel® Rapid Start Technology

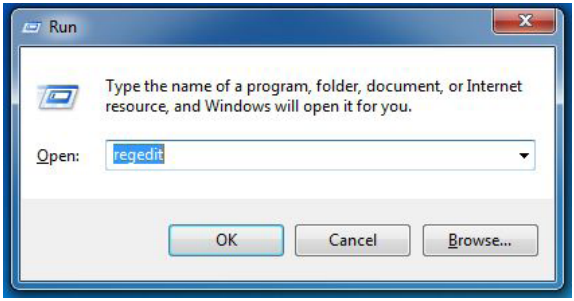
Intel® Rapid Start Technology enables your system to wake up faster from deep sleep, saving time and power consumption. Feel secure to know that your system will resume to working condition even if an unexpected power loss happens while the PC is in sleep mode.

3.3.1 System Requirements

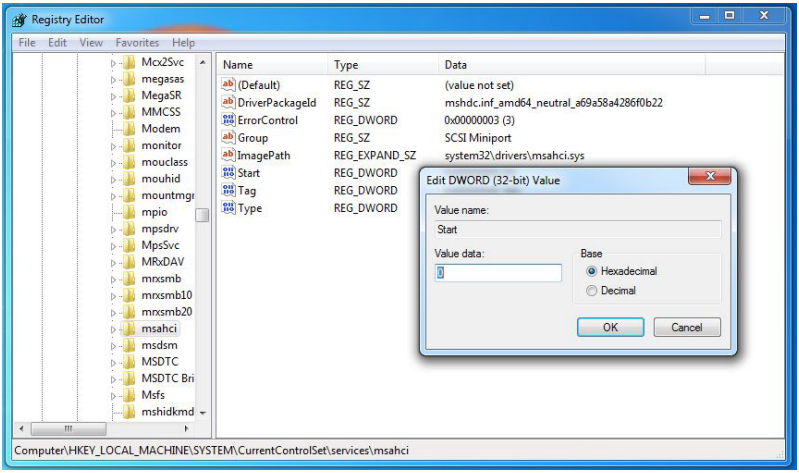
- Confirm whether your motherboard supports this feature.
- Operating system: Microsoft Windows 8.1/8/7 (32- or 64-bit edition)
- Set the SATA mode to AHCI. If Windows 8.1/8/7 is already installed under IDE mode, directly changing the SATA mode to AHCI may cause Windows 8.1/8/7 to crash while booting. If your system is not in AHCI mode, please follow the instructions below.

There are certain risks. Please backup any important data before operating to avoid loss.

1. Press **Win + R** simultaneously in Windows 8.1/8/7, type "Regedit" into the word box then click **OK**.



2. Enter into **HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\services\msahci** in Windows Registry Editor. Double click on the value **Start** and change the value from **3** into **0**. Click on **OK**.



3. Exit the Registry Editor window and restart the computer.
4. Press **F2** to enter BIOS, then go to **Advanced -> Storage Configuration** and change SATA Mode to **AHCI**. Press **F10** to save changes and exit.
5. Enter Windows 8.1/8/7. Windows will discover the new device and install AHCI drivers automatically.

3.3.2 Setup Guide

Configuring Rapid Start

Step 1

Run ASRock Rapid Start utility from **Start -> All Programs -> ASRock Utility**.

Step 2

If you have more than one hard drives in your system, you must select one, then choose the **Partition Size** desired for your hidden partition and click on **Create**. The system will automatically create a hidden partition according to your settings. If there are SSD's installed into your system, it is recommended to create the partition on the SSD.

Step 3

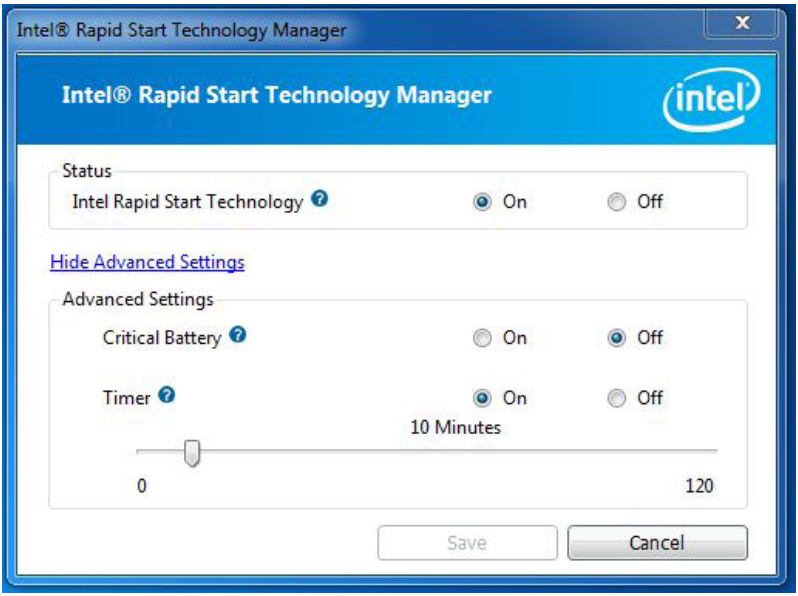
When prompted to restart after the setup, click **Yes** to reboot.

Step 4

Double-click the Intel® Rapid Start Technology Manager icon in the Windows system tray.

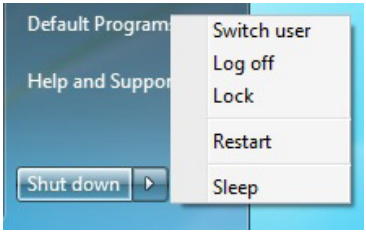
Step 5

Make sure Rapid Start is on. Drag the slider to configure the time. For example, if the timer value is set to ten minutes, the system will enable Rapid Start mode after entering sleep state for ten minutes. If the timer is set to 0 minutes, Windows will immediately enable Rapid Start mode as it enters sleep state.



Using Rapid Start

1. You may shut down the computer without terminating the applications or files you are executing currently. Click on Windows Start -> the arrow next to Shut down, and click on **Sleep**.



2. Windows system will enter sleep state.
3. According to your settings in Rapid Start Technology Manager, the system will automatically wake up and enable Rapid Start mode after entering sleep

state for a period of time. The power of the computer in Rapid Start mode can be cut off, it will not cause data loss of the programs or files you were executing before entering sleep state.

4. When you wish to continue to use the computer just hit the power button, the system will rapidly return to Windows, the programs and files which you were using before entering sleep state will be accessible immediately.

3.4 Intel® Smart Connect Technology

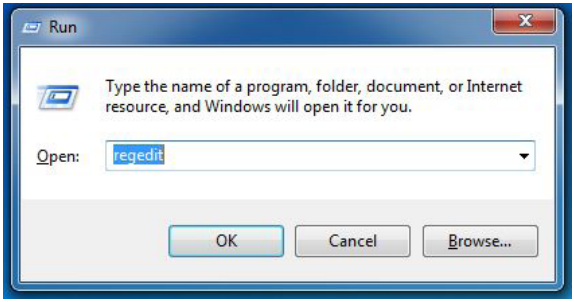
Intel® Smart Connect Technology is a feature that periodically wakes your computer from Windows® sleep state to refresh email or social networking applications. It saves your waiting time and keeps the content always up-to-date.

3.4.1 System Requirements

- Confirm whether your motherboard supports this feature.
- Operating system: Microsoft Windows 8.1/8/7 (32- or 64-bit edition)
- Set the SATA mode to AHCI. If Windows 8.1/8/7 is already installed under IDE mode, directly changing the SATA mode to AHCI may cause Windows 8/7 to crash while booting. If your system is not in AHCI mode, please follow the instructions below.

There are certain risks. Please backup any important data before operating to avoid loss.

1. Press **Win + R** simultaneously in Windows 8/7, type "Regedit" into the word box then click **OK**.



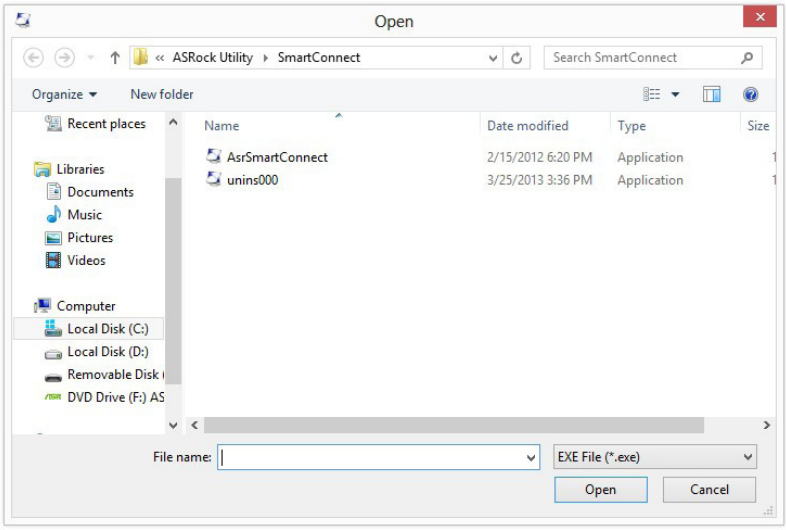
2. Enter into **HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\services\msahci** in Windows Registry Editor. Double click on the value **Start** and change the value from **3** into **0**. Click on **OK**.

3.4.2 Setup Guide

Installing ASRock Smart Connect Utility

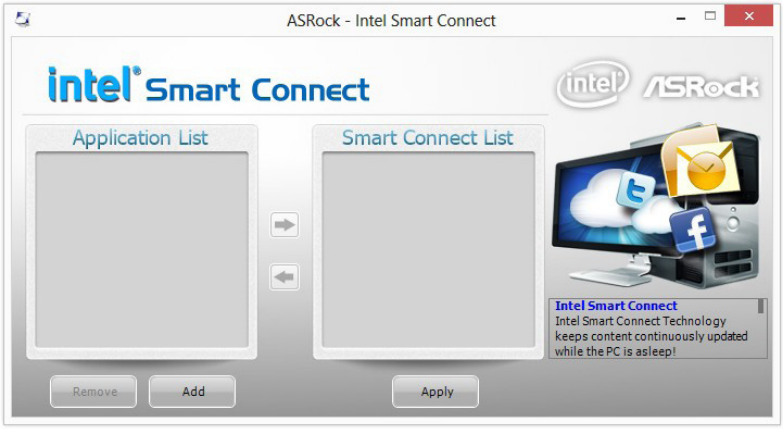
Step 1

Install **ASRock Smart Connect Utility**, which is located in the folder at the following path of the Support CD: \ **ASRock Utility > Smart Connect**.



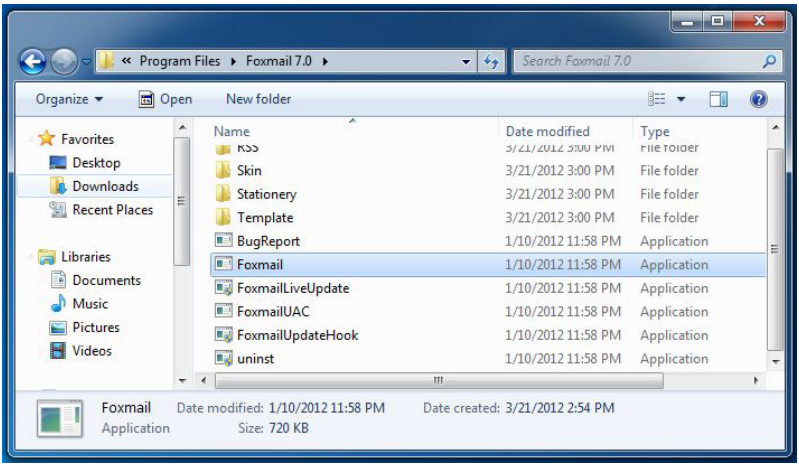
Step 2

Once installed, run ASRock Smart Connect from your desktop or go to Windows **Start -> All Programs -> ASRock Utility**.



Step 3

Click the **Add** button. Take Foxmail as an example, add Foxmail to the Application list.



Step 4

Select Foxmail from the **Application List**, then click the arrow pointing right to add this application to the **Smart Connect List**.

Step 5

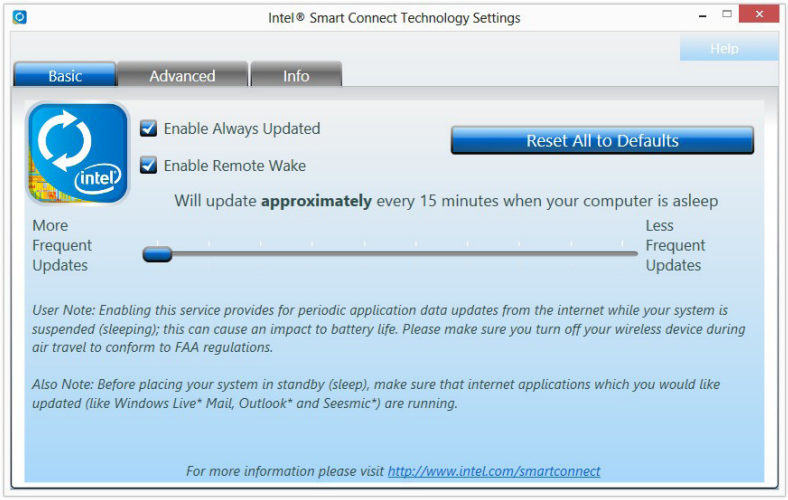
Click **Apply** to enable Smart Connect.

Step 6

Double-click the Intel® Smart Connect Technology Manager icon in the Windows system tray.

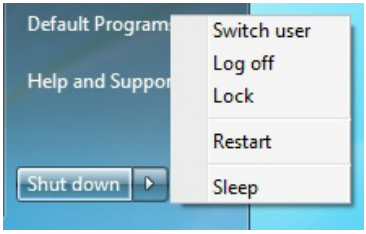
Step 7

Drag the slider to configure how often the system will connect to the network to download updates. Shorter durations will provide more frequent updates, but may cause more power consumption.


Intel® Smart Connect Technology Settings
Help
Basic
Advanced
Info
Enable Always Updated
Enable Remote Wake
Reset All to Defaults
Will update **approximately** every 15 minutes when your computer is asleep
More Frequent Updates
Less Frequent Updates
User Note: Enabling this service provides for periodic application data updates from the internet while your system is suspended (sleeping); this can cause an impact to battery life. Please make sure you turn off your wireless device during air travel to conform to FAA regulations.
Also Note: Before placing your system in standby (sleep), make sure that internet applications which you would like updated (like Windows Live* Mail, Outlook* and Seesmic*) are running.
For more information please visit http://www.intel.com/smartconnect

Using Smart Connect

1. Keep the applications which you wish to connect to the internet and receive updates while the system is in sleep state running. Foxmail for instance, keep Foxmail running.
2. Click on Windows Start -> the arrow next to Shut down, and click on **Sleep**.



3. Windows system will enter sleep state.

4. The system will wake up from sleep state periodically, and then start to update Foxmail. The screen will not display anything so the computer can maintain minimum power usage. Afterwards, the system will automatically return to sleep state again.

5. Upon waking up the system, you will find the new mail that were sent to you during sleep state are already updated and ready to be read in Foxmail.

3.5 ASRock Cloud (Intel® I218V)

ASRock Cloud makes your mobile devices connect to your PC seamlessly!

Have you ever been in a situation where you emergently needed certain files in your computer, however the computer was gazillion miles away out of reach? ASRock Cloud includes several technologies and software solutions for remotely controlling your computer, even if the computer is in off mode. For ASRock motherboards with a ***Intel***® LAN chip, ASRock Cloud allows users to remotely wake up their computers via the internet by using a secondary device, such as a smartphone or tablet. Users may use ***Orbweb.ME Professional*** to remotely wake up and control their computers, or they could wake up the computer then use any other preferred remote desktop application. This motherboard supports Remote Wake Technology with the onboard Intel® LAN, so you can connect with your PC from anywhere in the world. You will be able to power your PC on or turn it off, monitor and take control of it remotely with another smartphone, tablet or computer.

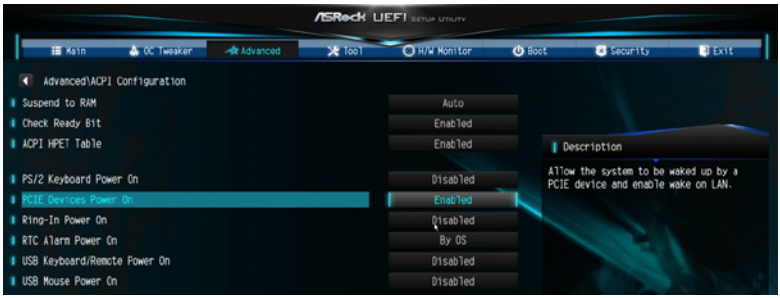
**ASRock Cloud is supported on Windows 8.1.*

3.5.1 Intel® Remote Wake Technology

Intel® Remote Wake Technology allows you to wake up and remote control your home computer from sleep state.

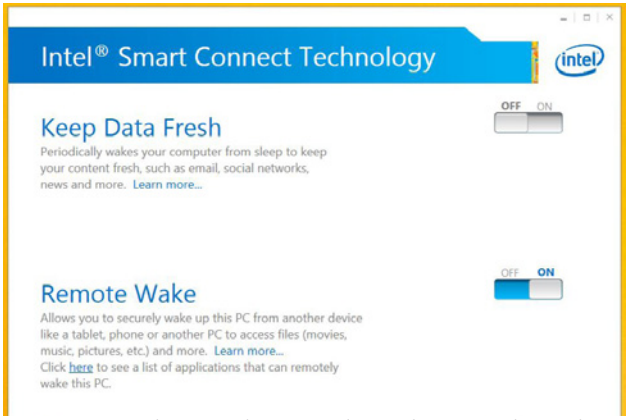
Before configuring this feature, verify the followings on your host computer:

- Make sure that the "PCIE Devices Power On" is enabled in *UEFI SETUP UTILITY > Advanced > ACPI Configuration*.



**The UEFI screen is for reference only. The actual screen may differ by model.*

- Make sure that the "Remote Wake" is enabled in "Intel® Smart Connect Technology Manager".


Intel® Smart Connect Technology
intel
Keep Data Fresh
Periodically wakes your computer from sleep to keep your content fresh, such as email, social networks, news and more. Learn more...
OFF ON
Remote Wake
Allows you to securely wake up this PC from another device like a tablet, phone or another PC to access files (movies, music, pictures, etc.) and more. Learn more...
Click here to see a list of applications that can remotely wake this PC.
OFF ON

**Intel Remote Wake is supported on Windows 8 or Windows 8 64bit OS.*

English

3.5.2 Configuring and Using Orbweb.ME Professional

Orbweb.ME Professional is a remote control software allowing you to easily access and control the remote host installed with the Orbweb.ME Professional host software.

Installing Orbweb.ME Professional on the Host Computer

You can find the Orbweb.ME Professional host software in the Support CD or just download it from http://orbweb.me.

Step 1

Click on the Orbweb.ME Professional installer package file to start installation.

Step 2

Follow the onscreen instructions to complete the installation.

Step 3

When installation completes, reboot the computer.

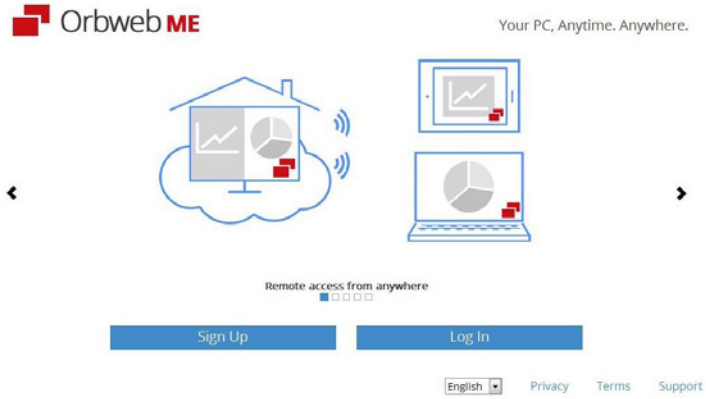
Signing Up for Host Computer Registration

Step 1

Double-click the Orbweb.ME Professional icon on your desktop.

Step 2

On the Orbweb.ME Portal login page, click **Sign Up** to create an Orbweb.ME account and name your host computer.



Step 3

You will receive a verification email. Follow the steps in the email to verify your account. After verifying your account, you can access your PC through web browsers at http://orbweb.me.

On the Account Verified page, if you click **Go to My Computers**, you will see the Orbweb.ME portal page as a client.

Setting Up Shared Folders on Host Computer

Step 1

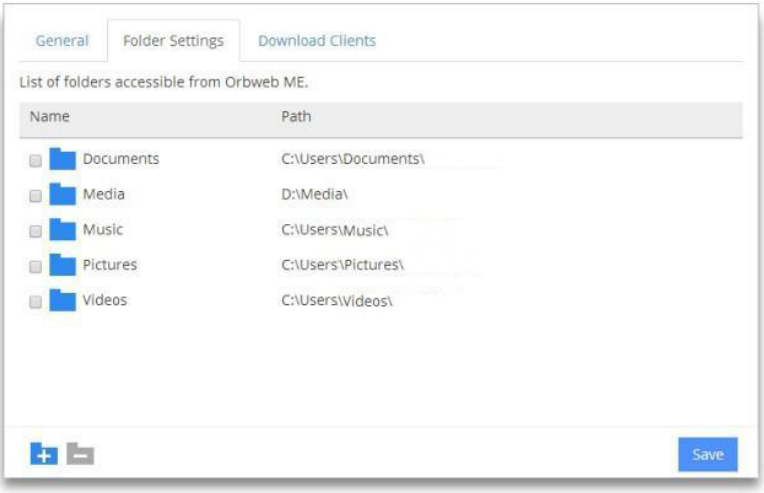
Double-click the Orbweb.ME Professional icon on your desktop.

Or, if you just finished signing up for your host computer, you can click **Configure this computer** in the screen to begin.

Step 2

Click **Folder Settings** tab and the default shared folders display.

To add a folder, click . Select a folder to add it into Orbweb.ME. Then click **Save**.



You can access the documents in these shared folders on the host computer remotely through Xplorer from your client device.

REMOTE ACCESS FROM A CLIENT DEVICE

The lastest version of Java is required to be installed to use the Remote Desktop and Xplorer functions.

Using Remote Wake-Up

Remote Wake-Up allows you to remotely put your host computer to sleep and wake your host computer up from a client device.

If you use a motherboard with dual LAN ports, please disable one of the LAN ports to use the Remote Wake-Up function. To do so, go to Control Panel > Network and Sharing Center > Manage Network Connections, right-click Local Area Connections and select Disable.

For Windows PC users:

Step 1

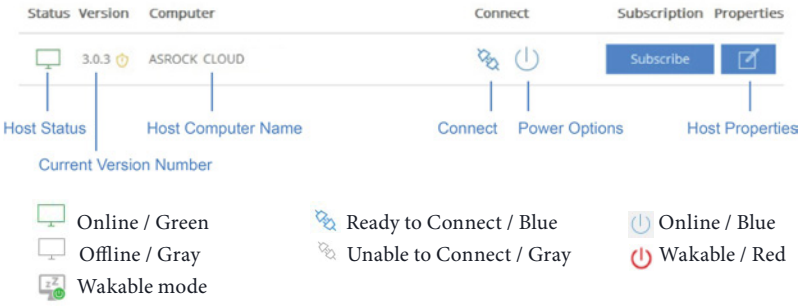
Go to Orbweb.ME portal login page: **http://orbweb.me**

Step 2

Log in with your Orbweb.ME account and password.

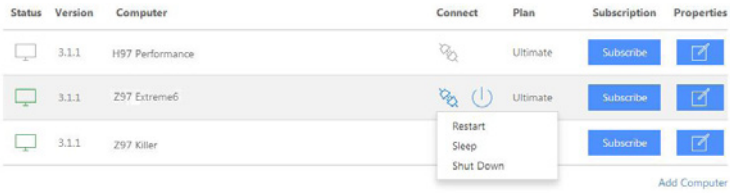
Step 3

Find the host computer from the list by the computer name you give.



Step 4

Click and power options appear. Click to select **Restart**, **Sleep** or **Shut Down**.



Select **Restart** from the options to restart your host computer remotely.

When you select **Sleep**, if the host device is WOW(Wake-On-Wan) compatible, you can put your host computer to sleep (S3/S4). The host status in the Status column shows offline and ready to be awaked and the power option shows wakable .
To wake up the computer, click .

Please be noted that if the host device is not WOW compatible, the host status icon will turn offline and the power option icon will disappear. You have to physically wake up computer in order to bring power option icon back to online.

If you select **Shut Down**, you can turn off your computer remotely. However, the Intel® Remote Wake Technology does not support remote wake-up from shutdwon (S5). Please physically turn on your host computer.

For iOS or Android Mobile Devices users:

Download and install "Orbweb.ME Professional" app from the App Store (iOS) or Play Store (Android).

Step 1

Tap the "Orbweb.ME Professional" app icon to launch it.

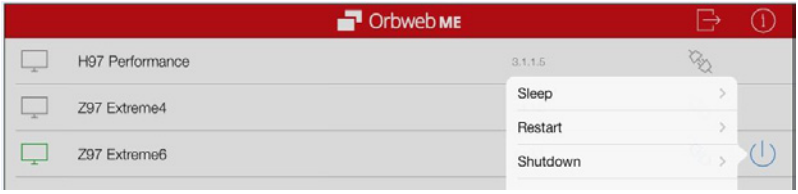
Step 2

Log in with your Orbweb.ME account and password.

Step 3

Tap the **Power Options** icon and power options appear.

Tap to select **Restart**, **Sleep** or **Shutdown**.



1. *Please be noted that if the host device is not WOW compatible, the host status icon will turn offline and the power option icon will dissappear. You have to physically wake up computer in order to bring power option icon back to online.*
2. *The Intel® Remote Wake Technology does not support remote wake-up from shutdwon (S5). If you press Shutdown to remotely turn off the host computer, please turn it on physically.*

Using Remote Desktop

Remote Desktop allows you to remotely access your host computer from a client device.

For Windows PC users:

Step 1

Go to Orbweb.ME portal login page: **http://orbweb.me**

Step 2

Log in with your Orbweb.ME account and password.

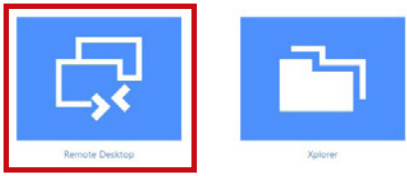
Step 3

Click the **Connect** icon .

Step 4

Click on **Remote Desktop**.

If the **Remote Desktop Connection** dialog appears, click **Connect** to continue.



English

Step 5

Enter the Windows password to log in and you will see the desktop of your host computer.

Please refer to the user manual of the Orbweb.ME Professional for more instructions on how to use Orbweb.ME Professional.

<u>For iOS or Android Mobile Devices users:</u>

Download and install "Orbweb.ME Professional" app from the App Store (iOS) or Play Store (Android).

Step 1

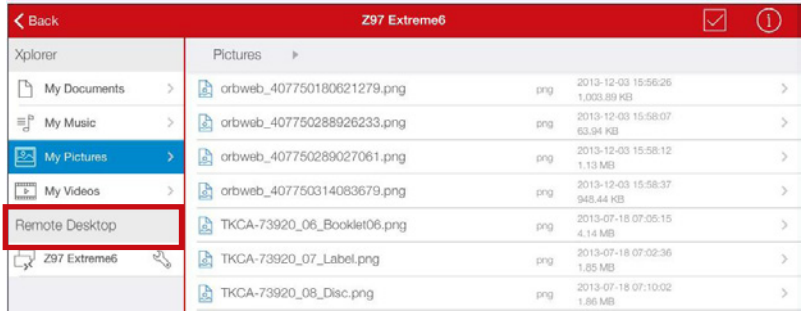
Tap the "Orbweb.ME Professional" app icon to launch it.

Step 2

Log in with your Orbweb.ME account and password.

Step 3

Tap the host computer name that you want to access under the **Remote Desktop** section.



Step 4

Enter the Windows password to log in and you will see the desktop of your host computer.

Using Xplorer

Xplorer allows you to remotely access documents on your host computer from a client device.

For Windows PC users:

Step 1

Go to Orbweb.ME portal login page: **http://orbweb.me**

Step 2

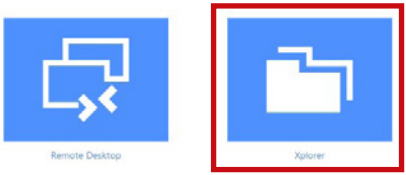
Log in with your Orbweb.ME account and password.

Step 3

Click the **Connect** icon .

Step 4

Click on **Xplorer**.



Step 5

Root directory displays. Click on a folder name to open the folder.

Step 6

Click on a file name to preivew the file.

You can also delete, rename, move, and copy a selected file. For more instructions on how to use Xplorer, refer to the user manual of the Orbweb.ME Professional.

For iOS or Android Mobile Devices users:

Download and install "Orbweb.ME Professional" app from the App Store (iOS) or Play Store (Android).

Step 1

Tap the "Orbweb.ME Professional" app icon to launch it.

Step 2

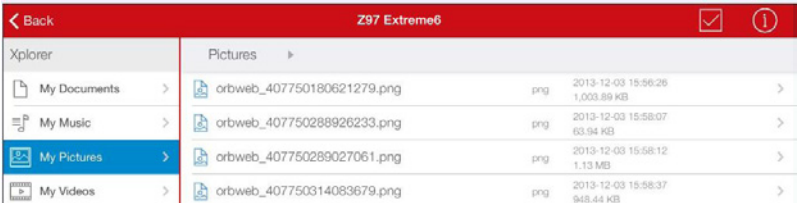
Log in with your Orbweb.ME account and password.

Step 3

Tap the **Connect** icon .

Step 4

Tap a folder name under the **Xplorer** section and you can see the files in this folder.



Tap a file name to preivew the file.

You can also delete, rename, move, and copy a selected file. For more instructions on how to use Xplorer, refer to the user manual of the Orbweb.ME Professional.

Tutorial Video

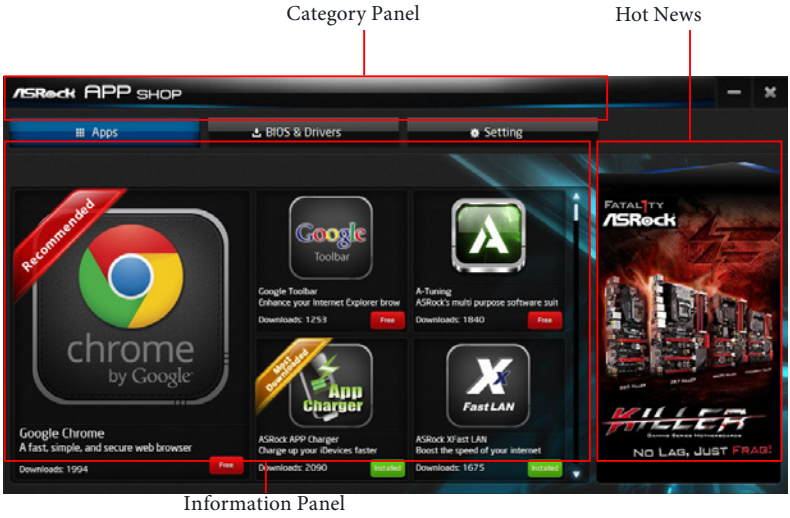
3.6 ASRock APP Shop

The ASRock APP Shop is an online store for purchasing and downloading software applications for your ASRock computer. You can install various apps and support utilities quickly and easily, and optimize your system and keep your motherboard up to date simply with a few clicks.

Double-click on your desktop to access ASRock APP Shop utility.

**You need to be connected to the Internet to download apps from the ASRock APP Shop.*

3.6.1 UI Overview



Category Panel: The category panel contains several category tabs or buttons that when selected the information panel below displays the relative information.

Information Panel: The information panel in the center displays data about the currently selected category and allows users to perform job-related tasks.

Hot News: The hot news section displays the various latest news. Click on the image to visit the website of the selected news and know more.

3.6.2 Apps

When the "Apps" tab is selected, you will see all the available apps on screen for you to download.

Installing an App

Step 1

Find the app you want to install.

The most recommended app appears on the left side of the screen. The other various apps are shown on the right. Please scroll up and down to see more apps listed.

You can check the price of the app and whether you have already intalled it or not.

Free - The red icon displays the price or "Free" if the app is free of charge.

Installed - The green "Installed" icon means the app is installed on your computer.

Step 2

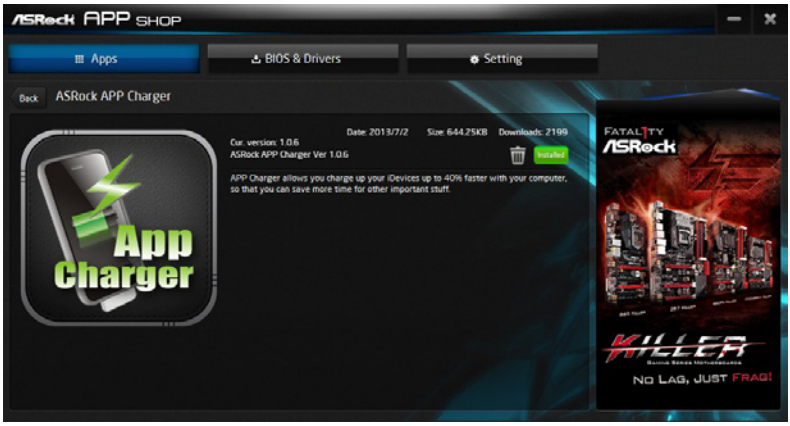
Click on the app icon to see more details about the selected app.

Step 3

If you want to install the app, click on the red icon Free to start downloading.

Step 4

When installation completes, you can find the green "Installed" icon appears on the upper right corner.



To uninstall it, simply click on the trash can icon .
*The trash icon may not appear for certain apps.

Upgrading an App

You can only upgrade the apps you have already installed. When there is an available new version for your app, you will find the mark of "New Version"

appears below the installed app icon.

Step 1

Click on the app icon to see more details.

Step 2

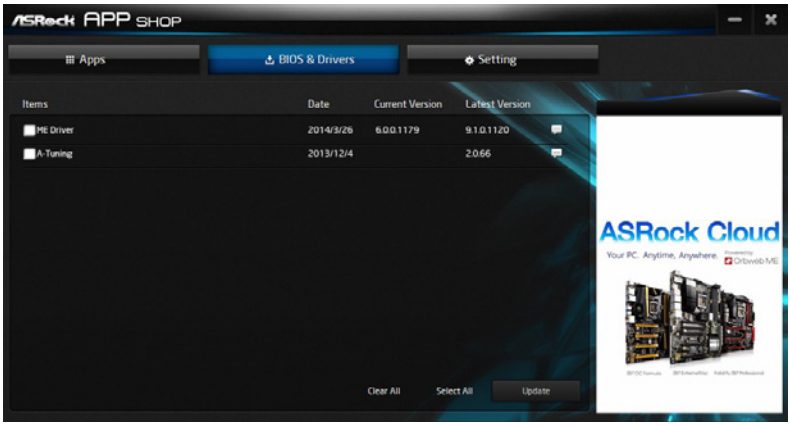
Click on the yellow icon

to start upgrading.

3.6.3 BIOS & Drivers

Installing BIOS or Drivers

When the "BIOS & Drivers" tab is selected, you will see a list of recommended or critical updates for the BIOS or drivers. Please update them all soon.



Step 1

Please check the item information before update. Click on to see more details.

Step 2

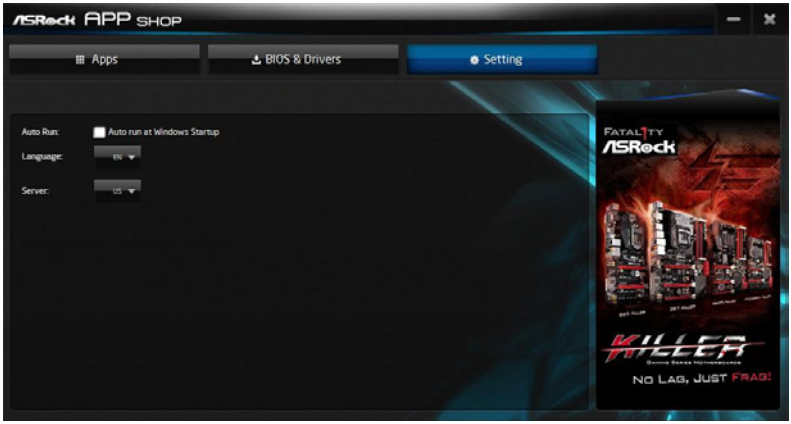
Click to select one or more items you want to update.

Step 3

Click Update to start the update process.

3.6.4 Setting

In the "Setting" page, you can change the language, select the server location, and determine if you want to automatically run the ASRock APP Shop on Windows startup.



3.7 Start8

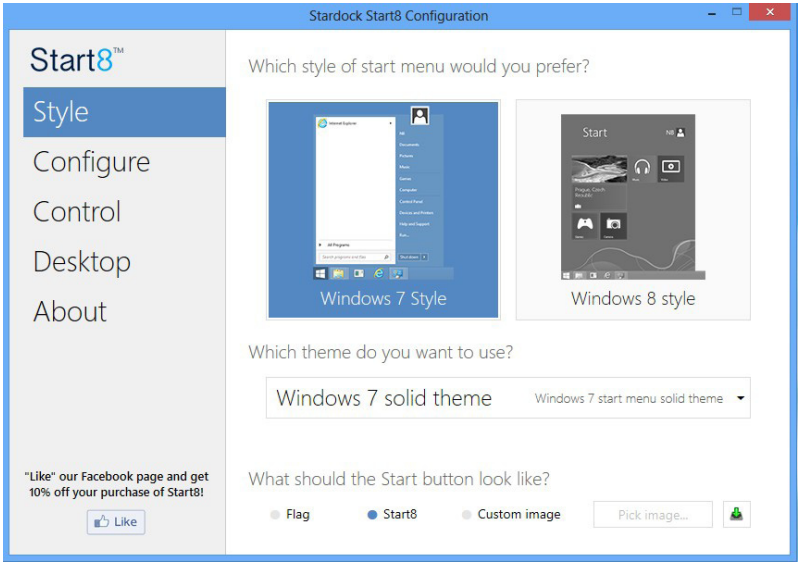
For those Windows 8 users who miss the Start Menu, Start8 is an ideal solution that brings back the familiar Start Menu along with added customizations for greater efficiency.

3.7.1 Installing Start8

Install **Start8**, which is located in the folder at the following path of the Support CD: **\ ASRock Utility > Start8**.

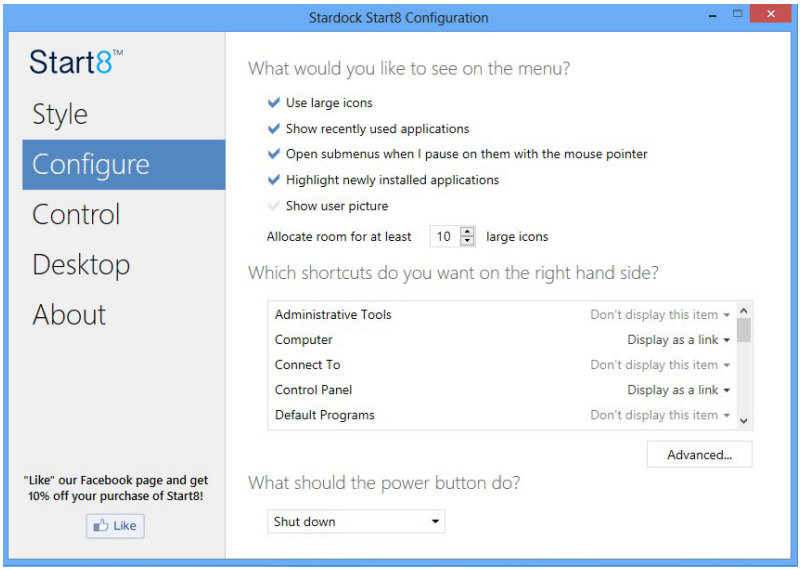
3.7.2 Configuring Start8

Style



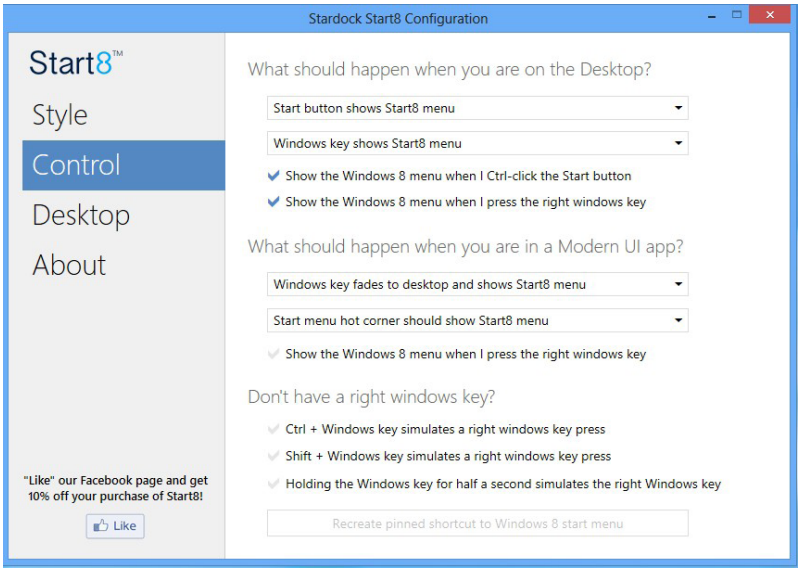
Select between the Windows 7 style and Windows 8 style Start Menu. Then select the theme of the Start Menu and customize the style of the Start icon.

Configure


Stardock Start8 Configuration
Start8™
Style
Configure
Control
Desktop
About
"Like" our Facebook page and get 10% off your purchase of Start8!
Like
What would you like to see on the menu?
Use large icons
Show recently used applications
Open submenus when I pause on them with the mouse pointer
Highlight newly installed applications
Show user picture
Allocate room for at least 10 large icons
Which shortcuts do you want on the right hand side?
Administrative Tools Don't display this item
Computer Display as a link
Connect To Don't display this item
Control Panel Display as a link
Default Programs Don't display this item
Advanced...
What should the power button do?
Shut down

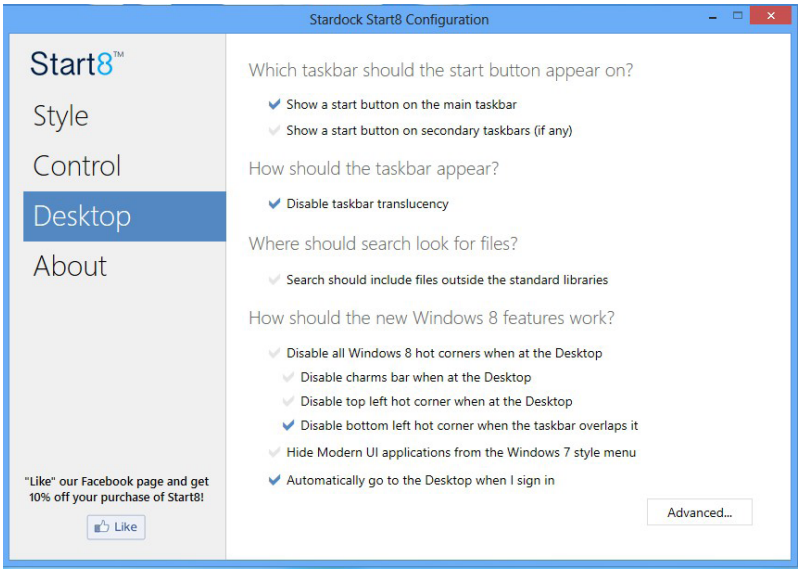
Configure provides configuration options, including icon sizes, which shortcuts you want Start Menu to display, quick access to recently used apps, the functionality of the power button, and more.

Control


Stardock Start8 Configuration
Start8™
Style
Control
Desktop
About
"Like" our Facebook page and get 10% off your purchase of Start8!
Like
What should happen when you are on the Desktop?
Start button shows Start8 menu
Windows key shows Start8 menu
Show the Windows 8 menu when I Ctrl-click the Start button
Show the Windows 8 menu when I press the right windows key
What should happen when you are in a Modern UI app?
Windows key fades to desktop and shows Start8 menu
Start menu hot corner should show Start8 menu
Show the Windows 8 menu when I press the right windows key
Don't have a right windows key?
Ctrl + Windows key simulates a right windows key press
Shift + Windows key simulates a right windows key press
Holding the Windows key for half a second simulates the right Windows key
Recreate pinned shortcut to Windows 8 start menu

Control lets you configure what a click on the start button or a press on the Windows key does.

Desktop


Stardock Start8 Configuration
Start8™
Style
Control
Desktop
About
"Like" our Facebook page and get 10% off your purchase of Start8!
Like
Which taskbar should the start button appear on?
Show a start button on the main taskbar
Show a start button on secondary taskbars (if any)
How should the taskbar appear?
Disable taskbar translucency
Where should search look for files?
Search should include files outside the standard libraries
How should the new Windows 8 features work?
Disable all Windows 8 hot corners when at the Desktop
Disable charms bar when at the Desktop
Disable top left hot corner when at the Desktop
Disable bottom left hot corner when the taskbar overlaps it
Hide Modern UI applications from the Windows 7 style menu
Automatically go to the Desktop when I sign in
Advanced...

Desktop allows you to disable the hot corners when you are working on the desktop. It also lets you choose whether or not the system boots directly into desktop mode and bypass the Metro user interface.

About

Displays information about Start8.

Chapter 4 UEFI SETUP UTILITY

4.1 Introduction

This section explains how to use the UEFI SETUP UTILITY to configure your system. You may run the UEFI SETUP UTILITY by pressing <F2> or <Del> right after you power on the computer, otherwise, the Power-On-Self-Test (POST) will continue with its test routines. If you wish to enter the UEFI SETUP UTILITY after POST, restart the system by pressing <Ctl> + <Alt> + <Delete>, or by pressing the reset button on the system chassis. You may also restart by turning the system off and then back on.

Because the UEFI software is constantly being updated, the following UEFI setup screens and descriptions are for reference purpose only, and they may not exactly match what you see on your screen.

4.1.1 UEFI Menu Bar

The top of the screen has a menu bar with the following selections:

Main	For setting system time/date information
OC Tweaker	For overclocking configurations
Advanced	For advanced system configurations
Tool	Useful tools
H/W Monitor	Displays current hardware status
Boot	For configuring boot settings and boot priority
Security	For security settings
Exit	Exit the current screen or the UEFI Setup Utility

4.1.2 Navigation Keys

Use <←→> key or <→> key to choose among the selections on the menu bar, and use < ↑ > key or < ↓ > key to move the cursor up or down to select items, then press <Enter> to get into the sub screen. You can also use the mouse to click your required item.

Please check the following table for the descriptions of each navigation key.

Navigation Key(s)	Description
+ / -	To change option for the selected items
<Tab>	Switch to next function
<PGUP>	Go to the previous page
<PGDN>	Go to the next page
<HOME>	Go to the top of the screen
<END>	Go to the bottom of the screen
<F1>	To display the General Help Screen
<F7>	Discard changes and exit the SETUP UTILITY
<F9>	Load optimal default values for all the settings
<F10>	Save changes and exit the SETUP UTILITY
<F12>	Print screen
<ESC>	Jump to the Exit Screen or exit the current screen

4.2 Main Screen

When you enter the UEFI SETUP UTILITY, the Main screen will appear and display the system overview.

Favorite

Display your collection of BIOS items. Press F5 to add/remove your favorite items.

Active Page on Entry

Select the default page when entering the UEFI setup utility.

Full HD UEFI

When [Auto] is selected, the resolution will be set to 1920 x 1080 if the monitor supports Full HD resolution. If the monitor does not support Full HD resolution, then the resolution will be set to 1024 x 768. When [Disable] is selected, the resolution will be set to 1024 x 768 directly.

UEFI Guide

UEFI Guide is a quick tutorial for ASRock's UEFI setup Utility. You may abort the tutorial by pressing "Esc".

4.3 OC Tweaker Screen

In the OC Tweaker screen, you can set up overclocking features.

Because the UEFI software is constantly being updated, the following UEFI setup screens and descriptions are for reference purpose only, and they may not exactly match what you see on your screen.

Advanced Turbo

You can use this option to increase your system performance. This option appears only when your CPU supports this function. This option appears only when you adopt K-Series CPU.

Load Optimized CPU OC Setting

You can use this option to load optimized CPU overclocking setting. Please note that overclocking may cause damage to your CPU and motherboard. It should be done at your own risk and expense. This option appears only when you adopt K-Series CPU.

Load Optimized GPU OC Setting

You can use this option to load optimized GPU overclocking setting. Please note that overclocking may cause damage to your GPU and motherboard. It should be done at your own risk and expense. This option appears only when you adopt K-Series CPU.

CPU Configuration

CPU Ratio

The CPU speed is determined by the CPU Ratio multiplied with the BCLK. Increasing the CPU Ratio will increase the internal CPU clock speed without affecting the clock speed of other components.

CPU Cache Ratio

The CPU Internal Bus Speed Ratio. The maximum should be the same as the CPU Ratio.

BCLK/PCIE Frequency

The CPU speed is determined by the CPU Ratio multiplied with the BCLK. Increasing the BCLK will increase the internal CPU clock speed but also affect the clock speed of other components.

Spread Spectrum

Enable Spread Spectrum to reduce electromagnetic interference for passing EMI tests. Disable to achieve higher clock speeds when overclocking.

CPU OC Fixed Mode

CPU OC fix mode allows you to keep the max CPU ratio as your setting without throttling. Please note that overclocking may cause damage to your CPU and motherboard. It should be done at your own risk and expense.

Intel SpeedStep Technology

Intel SpeedStep technology allows processors to switch between multiple frequencies and voltage points for better power saving and heat dissipation.

Intel Turbo Boost Technology

Intel Turbo Boost Technology enables the processor to run above its base operating frequency when the operating system requests the highest performance state.

Filter PLL Frequency

CPU BCLK Filter Frequency. Choose 1.6 for better overclocking capabilities.

Long Duration Power Limit

Configure Package Power Limit 1 in watts. When the limit is exceeded, the CPU ratio will be lowered after a period of time. A lower limit can protect the CPU and save power, while a higher limit may improve performance.

Long Duration Maintained

Configure the period of time until the CPU ratio is lowered when the Long Duration Power Limit is exceeded.

Short Duration Power Limit

Configure Package Power Limit 2 in watts. When the limit is exceeded, the CPU ratio will be lowered immediately. A lower limit can protect the CPU and save power, while a higher limit may improve performance.

Primary Plane Current Limit

Configure the current limit of the CPU under Turbo Mode in ampere. A lower limit can protect the CPU and save power, while a higher limit may improve performance.

GT Frequency

Configure the frequency of the integrated GPU.

GT Voltage Mode

Auto: For optimized settings.

Adaptive: Add voltage to the integrated GPU when the system is under heavy load.

Override: The voltage is fixed.

GT Adaptive Voltage

Configure the voltage added to the integrated GPU when the system is under heavy load.

GT Voltage Offset

Configure the fixed voltage added to the integrated GPU.

DRAM Timing Configuration

Load XMP Setting

Load XMP settings to overclock the DDR3 memory and perform beyond standard specifications.

DRAM Reference Clock

Select Auto for optimized settings.

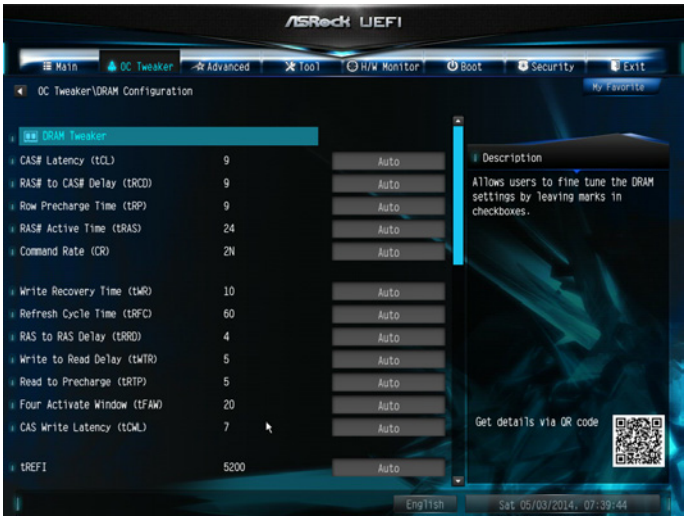
DRAM Frequency

If [Auto] is selected, the motherboard will detect the memory module(s) inserted and assign the appropriate frequency automatically.

DRAM Performance Mode

Choose high performance mode to increase memory performance. Use default settings for better system stability.

DRAM Configuration



DRAM Tweaker

Fine tune the DRAM settings by leaving marks in checkboxes. Click OK to confirm and apply your new settings.

CAS# Latency (tCL)

The time between sending a column address to the memory and the beginning of the data in response.

RAS# to CAS# Delay (tRCD)

The number of clock cycles required between the opening of a row of memory and accessing columns within it.

Row Precharge Time (tRP)

The number of clock cycles required between the issuing of the precharge command and opening the next row.

RAS# Active Time (tRAS)

The number of clock cycles required between a bank active command and issuing the precharge command.

Command Rate (CR)

The delay between when a memory chip is selected and when the first active command can be issued.

Write Recovery Time (tWR)

The amount of delay that must elapse after the completion of a valid write operation, before an active bank can be precharged.

Refresh Cycle Time (tRFC)

The number of clocks from a Refresh command until the first Activate command to the same rank.

RAS to RAS Delay (tRRD)

The number of clocks between two rows activated in different banks of the same rank.

Write to Read Delay (tWTR)

The number of clocks between the last valid write operation and the next read command to the same internal bank.

Read to Precharge (tRTP)

The number of clocks that are inserted between a read command to a row precharge command to the same rank.

Four Activate Window (tFAW)

The time window in which four activates are allowed the same rank.

CAS Write Latency (tCWL)

Configure CAS Write Latency.

tREFI

Configure refresh cycles at an average periodic interval.

tCKE

Configure the period of time the DDR3 initiates a minimum of one refresh command internally once it enters Self-Refresh mode.

tRDRD

Configure between module read to read delay.

tRDRDDR

Configure between module read to read delay from different ranks.

tRDRDDD

Use this to change DRAM tRWSR Auto/Manual settings. The default is [Auto].

tWRRD

Configure between module write to read delay.

tWRRDDR

Configure between module write to read delay from different ranks.

tWRRDDD

Use this to change DRAM tRRSR Auto/Manual settings. The default is [Auto].

Configure between module write to read delay from different DIMMs.

tWRWR

Configure between module write to write delay.

tWRWRDR

Configure between module write to write delay from different ranks.

tWRWRDD

Configure between module write to write delay from different DIMMs.

tRDWR

Configure between module read to write delay.

tRDWRDR

Configure between module read to write delay from different ranks.

tRDWRDD

Configure between module read to write delay from different DIMMs.

RTL (CHA)

Configure round trip latency for channel A.

RTL (CHB)

Configure round trip latency for channel B.

IO-L (CHA)

Configure IO latency for channel A.

IO-L (CHB)

Configure IO latency for channel B.

ODT WR (CHA)

Configure the memory on die termination resistors' WR for channel A.

ODT WR (CHB)

Configure the memory on die termination resistors' WR for channel B.

ODT NOM (CHA)

Use this to change ODT (CHA) Auto/Manual settings. The default is [Auto].

ODT NOM (CHB)

Use this to change ODT (CHB) Auto/Manual settings. The default is [Auto].

Command Tri State

Enable for DRAM power saving.

MRC Fast Boot

Enable Memory Fast Boot to skip DRAM memory training for booting faster.

DIMM Exit Mode

Select Slow Exit to reduce power consumption, or Fast Exit for better performance.

FIVR Configuration

FIVR Switch Frequency Signature

Select whether to boost or lower the FIVR Switch Frequency.

FIVR Switch Frequency Offset

Configure the percentage of frequency boost or deduction.

Vcore Override Voltage

Add voltage to the Vcore when the system is under heavy load.

Vcore Voltage Additional Offset

Configure the dynamic Vcore voltage added to the Vcore.

CPU Cache Override Voltage

Add voltage to the CPU Cache when the system is under heavy load.

CPU Cache Voltage Offset

Configure the voltage for the CPU Cache. Setting the voltage higher may increase system stability when overclocking.

System Agent Voltage Offset

Configure the voltage for the System Agent. Setting the voltage higher may increase system stability when overclocking.

CPU Analog IO Voltage Offset

CPU I/O Analog Voltage.

CPU Digital IO Voltage Offset

CPU I/O Digital Voltage.

CPU Integrated VR Faults

Disable FIVR Faults to raise the threshold to trigger CPU over current protection and over voltage protection for better overclocking capabilities.

CPU Integrated VR Efficiency Mode

Enable FIVR Efficiency Management for power saving. Disable for better performance and overclocking capabilities.

Voltage Configuration

CPU Input Voltage

Configure the voltage for the CPU.

CPU Load-Line Calibration

CPU Load-Line Calibration helps prevent CPU voltage droop when the system is under heavy load.

CPU Input Offset

The fixed external voltage input to the CPU.

DRAM Voltage

Use this to configure DRAM Voltage.

PCH 1.05V Voltage

Chipset 1.05V Voltage. Use default settings for best performance.

PCH 1.5V Voltage

I/O 1.5V Voltage. Use default settings for best performance.

4.4 Advanced Screen

In this section, you may set the configurations for the following items: CPU Configuration, Chipset Configuration, Storage Configuration, Intel® Rapid Start Technology, Intel® Smart Connect Technology, Intel® Thunderbolt™ , Super IO Configuration, ACPI Configuration, USB Configuration and Trusted Computing.

Setting wrong values in this section may cause the system to malfunction.

4.4.1 CPU Configuration

Active Processor Cores

Select the number of cores to enable in each processor package.

CPU C States Support

Enable CPU C States Support for power saving. It is recommended to keep C3, C6 and C7 all enabled for better power saving.

Enhanced Halt State (C1E)

Enable Enhanced Halt State (C1E) for lower power consumption.

CPU C3 State Support

Enable C3 sleep state for lower power consumption.

CPU C6 State Support

Enable C6 deep sleep state for lower power consumption.

CPU C7 State Support

Enable C7 deep sleep state for lower power consumption.

Package C State Support

Enable CPU, PCIe, Memory, Graphics C State Support for power saving.

CPU Thermal Throttling

Enable CPU internal thermal control mechanisms to keep the CPU from overheating.

No-Execute Memory Protection

Processors with No-Execution Memory Protection Technology may prevent certain classes of malicious buffer overflow attacks.

Intel Virtualization Technology

Intel Virtualization Technology allows a platform to run multiple operating systems and applications in independent partitions, so that one computer system can function as multiple virtual systems.

Hardware Prefetcher

Automatically prefetch data and code for the processor. Enable for better performance.

Adjacent Cache Line Prefetch

Automatically prefetch the subsequent cache line while retrieving the currently requested cache line. Enable for better performance.

4.4.2 Chipset Configuration

Primary Graphics Adapter

Select a primary VGA.

VT-d

Intel® Virtualization Technology for Directed I/O helps your virtual machine monitor better utilize hardware by improving application compatibility and reliability, and providing additional levels of manageability, security, isolation, and I/O performance.

Share Memory

Configure the size of memory that is allocated to the integrated graphics processor when the system boots up.

IGPU Multi-Monitor

Select disable to disable the integrated graphics when an external graphics card is installed. Select enable to keep the integrated graphics enabled at all times.

Render Standby

Power down the render unit when the GPU is idle for lower power consumption.

Onboard HD Audio

Enable/disable onboard HD audio. Set to Auto to enable onboard HD audio and automatically disable it when a sound card is installed.

Front Panel

Enable/disable front panel HD audio.

Onboard LAN1

Enable or disable the onboard network interface controller.

Onboard LAN2

Enable or disable the onboard network interface controller.

Deep Sleep

Configure deep sleep mode for power saving when the computer is shut down.

Restore on AC/Power Loss

Select the power state after a power failure. If [Power Off] is selected, the power will remain off when the power recovers. If [Power On] is selected, the system will start to boot up when the power recovers.

Good Night LED

By enabling Good Night LED, the Power/HDD LEDs will be switched off when the system is on. It will also automatically switch off the Power and Keyboard LEDs when the system enters into Standby/Hibernation mode.

Onboard Debug Port LED

Enable/disable the onboard Dr. Debug LED.

4.4.3 Storage Configuration

SATA Controller(s)

Enable/disable the SATA controllers.

SATA Mode Selection

IDE: For better compatibility.

AHCI: Supports new features that improve performance.

RAID: Combine multiple disk drives into a logical unit.

AHCI (Advanced Host Controller Interface) supports NCQ and other new features that will improve SATA disk performance but IDE mode does not have these advantages.

SATA Aggressive Link Power Management

SATA Aggressive Link Power Management allows SATA devices to enter a low power state during periods of inactivity to save power. It is only supported by AHCI mode.

Dynamic Storage Accelerator

Keep this option enabled for higher HDD and SDD I/O performance, lower latency and increased system responsiveness.

Hard Disk S.M.A.R.T.

S.M.A.R.T stands for Self-Monitoring, Analysis, and Reporting Technology. It is a monitoring system for computer hard disk drives to detect and report on various indicators of reliability.

M2_2/SATA3_4, SATA3_5 Switch

Auto: M2_2/SATA3_4, SATA3_5 auto switch
Force_SATA: Switch to SATA3_4, SATA3_5
Force_M2_2: Switch to M2_2

SATA Express Clockless

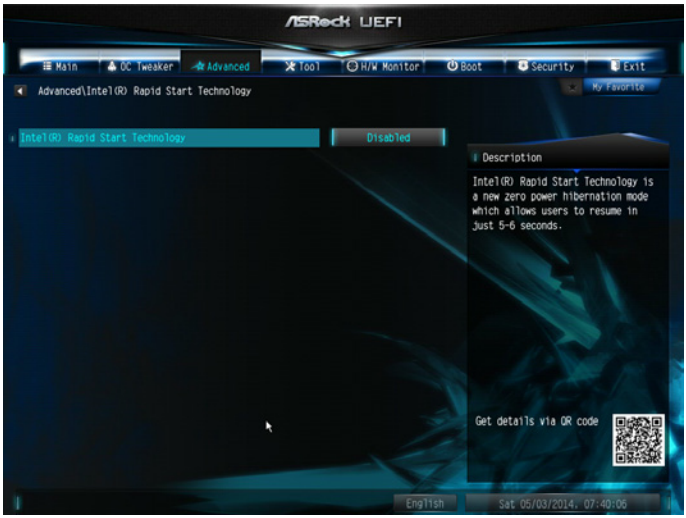
Enable to support SATA Express HDD (SATAE_2). Disable to turn off SATA Express HDD support.

ASMedia SATA3 Mode

IDE: For better compatibility.

AHCI: Supports new features that improve performance.

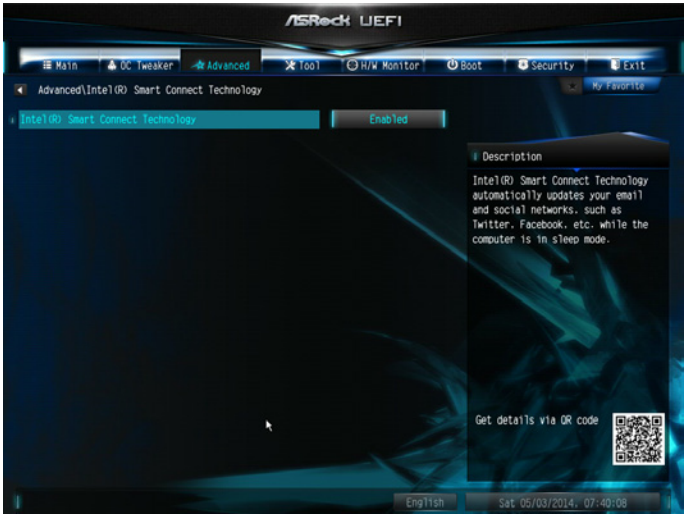
4.4.4 Intel® Rapid Start Technology



Intel® Rapid Start Technology

Intel® Rapid Start Technology is a new zero power hibernation mode which allows users to resume in just 5-6 seconds.

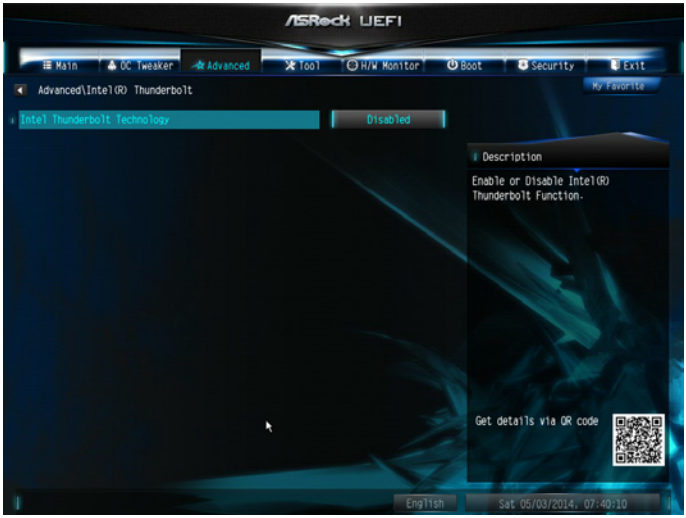
4.4.5 Intel® Smart Connect Technology



Intel® Smart Connect Technology

Intel® Smart Connect Technology automatically updates your email and social networks, such as Twitter, Facebook, etc. while the computer is in sleep mode.

4.4.6 Intel® Thunderbolt™



Intel Thunderbolt™ Technology

Enable or disable the Intel® Thunderbolt™ function.

Security Level

Select Legacy to skip the Windows certification checking process for Thunderbolt™ devices. Select Unique ID for checking the Windows certification, and show warning messages if the devices aren't certified. Or select DP++ to support DP 1.2.

Wake From Thunderbolt™ Devices

Allow the system to be waked up by Thunderbolt™ devices.

Ignore Thunderbolt™ Option Rom

Enable to skip Thunderbolt™ Option ROM during POST for faster boot speed.

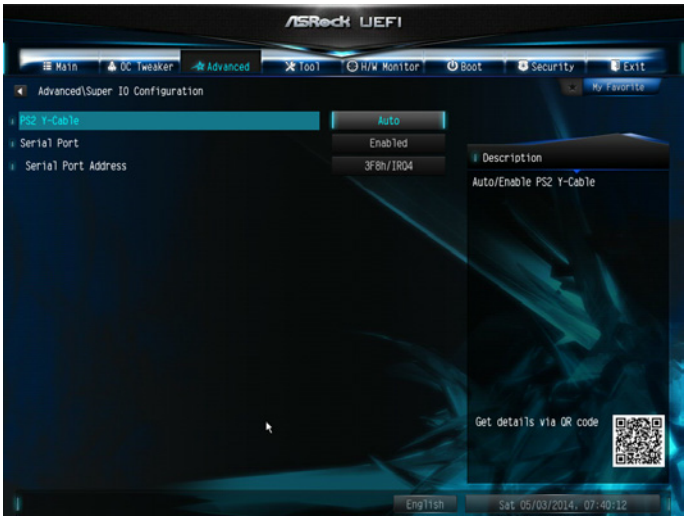
TBT Device IO resource Support

Enable IO Resource Support if your older Thunderbolt™ devices have trouble working properly.

Thunderbolt™ PCIe Cache-line Size

Configure the cache-line size of the Thunderbolt™ PCIe subtree.

4.4.7 Super IO Configuration



PS2 Y-Cable

Enable the PS2 Y-Cable or set this option to Auto.

Serial Port

Enable or disable the Serial port.

Serial Port Address

Select the address of the Serial port.

4.4.8 ACPI Configuration

Suspend to RAM

Select disable for ACPI suspend type S1. It is recommended to select auto for ACPI S3 power saving.

Check Ready Bit

Enable to enter the operating system after S3 only when the hard disk is ready, this is recommended for better system stability.

ACPI HPET Table

Enable the High Precision Event Timer for better performance and to pass WHQL tests.

PS/2 Keyboard Power On

Allow the system to be waked up by a PS/2 Keyboard.

PCIE Devices Power On

Allow the system to be waked up by a PCIE device and enable wake on LAN.

Wake From Onboard LAN 1

Allow the system to be waked up by the onboard LAN.

Ring-In Power On

Allow the system to be waked up by onboard COM port modem Ring-In signals.

RTC Alarm Power On

Allow the system to be waked up by the real time clock alarm. Set it to By OS to let it be handled by your operating system.

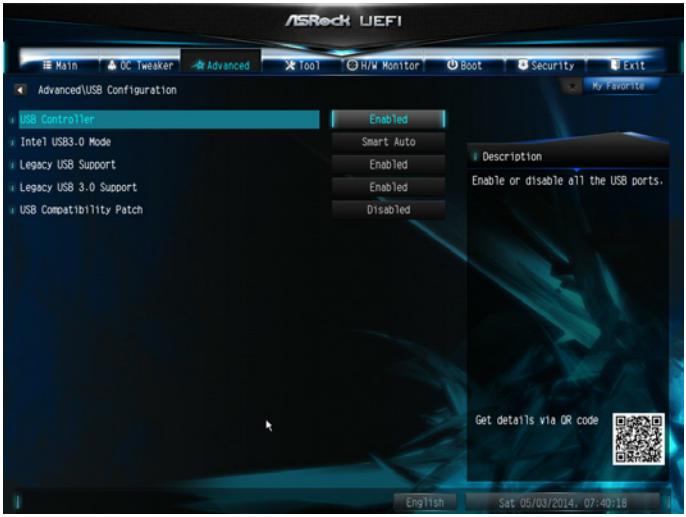
USB Keyboard/Remote Power On

Allow the system to be waked up by an USB keyboard or remote controller.

USB Mouse Power On

Allow the system to be waked up by an USB mouse.

4.4.9 USB Configuration



USB Controller

Enable or disable all the USB ports.

Intel USB 3.0 Mode

Select Intel® USB 3.0 controller mode. Set [Smart Auto] to keep the USB 3.0 driver enabled after rebooting (USB 3.0 is enabled in BIOS). Set [Auto] to automatically enable the USB 3.0 driver after entering the OS (USB 3.0 is disabled in BIOS). Set [Enabled] to keep the USB 3.0 driver enabled (Must install driver to use USB devices under Windows® 7). Set [Disabled] to disable the USB 3.0 ports.

Legacy USB Support

Enable or disable Legacy OS Support for USB 2.0 devices. If you encounter USB compatibility issues it is recommended to disable legacy USB support. Select UEFI Setup Only to support USB devices under the UEFI setup and Windows/Linux operating systems only.

Legacy USB 3.0 Support

Enable or disable Legacy OS Support for USB 3.0 devices. If you encounter USB compatibility issues it is recommended to disable legacy USB support. Select UEFI Setup Only to support USB devices under the UEFI setup and Windows/Linux operating systems only.

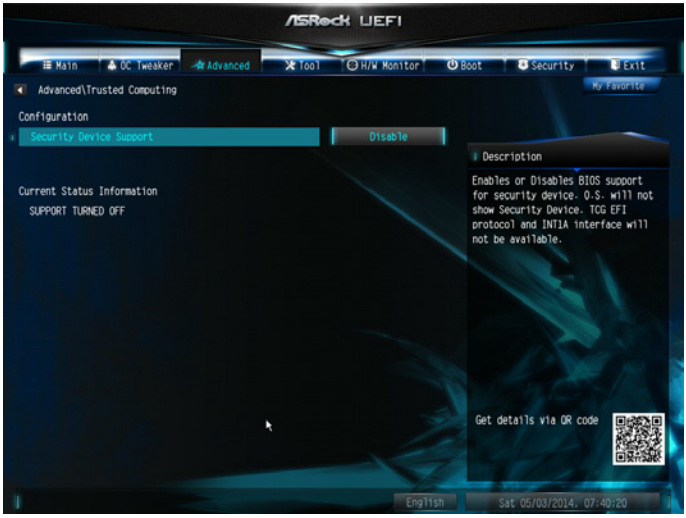
USB Compatibility Patch

If your USB devices (i.e. USB mouse or storage) encounter compatibility problems, please enable this option to fix it. Please note that after enabling this option, it is normal that the system will postpone booting up after pressing the power button.

Third Party USB 3.0 Controller

Enable or disable all of the USB 3.0 ports controlled by Third Party chips.

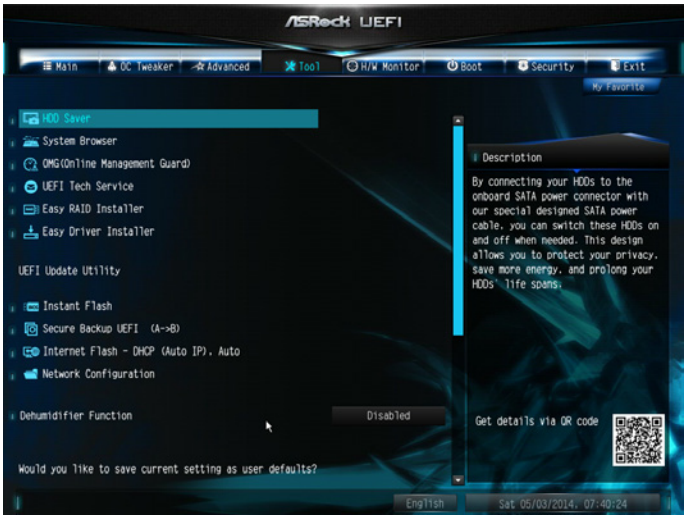
4.4.10 Trusted Computing



Security Device Support

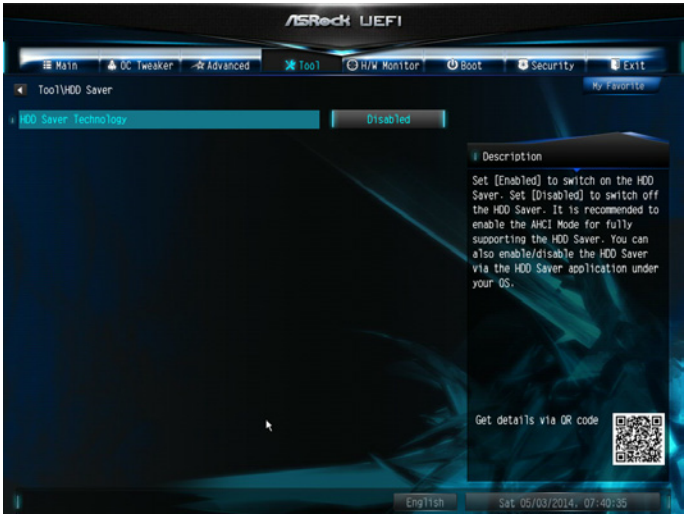
Enable or disable BIOS support for security device.

4.5 Tools


ASRock UEFI
Main
OC Tweaker
Advanced
Tool
H/W Monitor
Boot
Security
Exit
My Favorite
HDD Saver
System Browser
OMG(Online Management Guard)
UEFI Tech Service
Easy RAID Installer
Easy Driver Installer
UEFI Update Utility
Instant Flash
Secure Backup UEFI (A->B)
Internet Flash - DHCP (Auto IP), Auto
Network Configuration
Dehumidifier Function
Disabled
Would you like to save current setting as user defaults?
Description
By connecting your HDDs to the onboard SATA power connector with our special designed SATA power cable, you can switch these HDDs on and off when needed. This design allows you to protect your privacy, save more energy, and prolong your HDDs' life spans.
Get details via QR code
English
Sat 05/03/2014, 07:40:24

HDD Saver

By connecting your HDDs to the onboard SATA power connector with our special designed power cable, you can switch these HDDs on and off when needed. This design allows you to protect your privacy, save more energy, and prolong your HDDs' life spans.


ASRock UEFI
Main
OC Tweaker
Advanced
Tool
H/W Monitor
Boot
Security
Exit
My Favorite
Tool\HDD Saver
HDD Saver Technology
Disabled
Description
Set [Enabled] to switch on the HDD Saver. Set [Disabled] to switch off the HDD Saver. It is recommended to enable the AHCI Mode for fully supporting the HDD Saver. You can also enable/disable the HDD Saver via the HDD Saver application under your OS.
Get details via QR code
English
Sat 05/03/2014, 07:40:35

HDD Saver Technology

Set [Enabled] to switch on the HDD Saver. Set [Disabled] to switch off the HDD Saver. It is recommended to enable the AHCI Mode to fully support the HDD Saver. You can also enable/disable the HDD Saver via the HDD Saver application under your OS.

Onboard SATA Power Switch (SATA_PWR_1)

Set [Power On] to switch on the onboard SATA Power Connector. Set [Power Off] to switch off the onboard SATA Power Connector.

Re-detect SATA Power Connection

Re-detect your SATA Power connection. It is recommended to proceed the re-detection for any changes of your HDD configuration. You can also proceed the re-detection via the HDD Saver application under your OS.

System Browser

ASRock System Browser shows the overview of your current PC and the devices connected.

OMG (Online Management Guard)

Administrators are able to establish an internet curfew or restrict internet access at specified times via OMG. You may schedule the starting and ending hours of internet access granted to other users. In order to prevent users from bypassing OMG, guest accounts without permission to modify the system time are required.

UEFI Tech Service

Contact ASRock Tech Service if you are having trouble with your PC. Please setup network configuration before using UEFI Tech Service.

Easy RAID Installer

Easy RAID Installer helps you to copy the RAID driver from the support CD to your USB storage device. After copying the drivers please change the SATA mode to RAID, then you can start installing the operating system in RAID mode.

Easy Driver Installer

For users that don't have an optical disk drive to install the drivers from our support CD, Easy Driver Installer is a handy tool in the UEFI that installs the LAN driver to your system via an USB storage device, then downloads and installs the other required drivers automatically.

Instant Flash

Save UEFI files in your USB storage device and run Instant Flash to update your UEFI.

Secure Backup UEFI

Whenever one of the ROM images are corrupted or outdated, switch to the other flash ROM and execute Secure Backup UEFI to duplicate the current working ROM image to the secondary flash ROM.

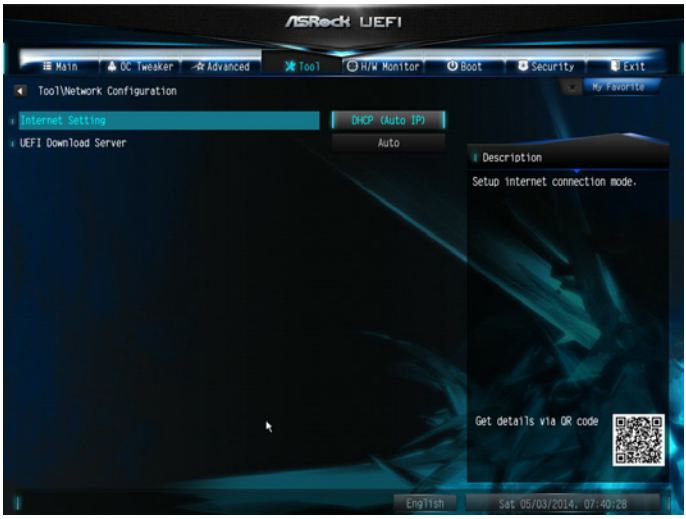
Internet Flash

ASRock Internet Flash downloads and updates the latest UEFI firmware version from our servers for you. Please setup network configuration before using Internet Flash.

*For BIOS backup and recovery purpose, it is recommended to plug in your USB pen drive before using this function.

Network Configuration

Use this to configure internet connection settings for Internet Flash.



Internet Setting

Enable or disable sound effects in the setup utility.

UEFI Download Server

Select a server to download the UEFI firmware.

Dehumidifier Function

If Dehumidifier Function is enabled, the computer will power on automatically to dehumidify the system after entering S4/S5 state.

Dehumidifier Period

Configure the period of time until the computer powers on and enables Dehumidifier after entering S4/S5 state.

Dehumidifier Duration

Configure the duration of the dehumidifying process before it returns to S4/S5 state.

Dehumidifier CPU Fan Setting

Configure the speed of the CPU fan while Dehumidifier is enabled. The higher the value, the faster the fan speed.

Max: 255

Min: 1

Save User Default

Type a profile name and press enter to save your settings as user default.

Load User Default

Load previously saved user defaults.

4.6 Hardware Health Event Monitoring Screen

This section allows you to monitor the status of the hardware on your system, including the parameters of the CPU temperature, motherboard temperature, fan speed and voltage.

ASRock UEFI
Main
OC Tweaker
Advanced
Tool
H/W Monitor
Boot
Security
Exit
My Favorite
CPU Vcore : +1.024 V
CPU Cache Voltage : +1.096 V
System Agent Voltage : +0.992 V
CPU Analog IO Volatge : +1.008 V
CPU Digital IO Volatge : +1.008 V
+ 12.00V : +12.192 V
+ 5.00V : +5.064 V
+ 3.30V : +3.344 V
CPU Fan 1 & 2 Setting Standard Mode
Chassis Fan 1 Setting Standard Mode
Chassis Fan 2 Setting Standard Mode
Chassis Fan 3 Setting Standard Mode
Over Temperature Protection Enabled
Description
When Over Temperature Protection is enabled, the system automatically shuts down when the motherboard is overheated.
Get details via QR code
English
Sat 05/03/2014, 07:40:44

CPU Fan 1 & 2 Setting

Select a fan mode for CPU Fans 1&2, or choose Customize to set 5 CPU temperatures and assign a respective fan speed for each temperature.

Chassis Fan 1 Setting

Select a fan mode for Chassis Fan 1, or choose Customize to set 5 CPU temperatures and assign a respective fan speed for each temperature.

Chassis Fan 2 Setting

Select a fan mode for Chassis Fan 2, or choose Customize to set 5 CPU temperatures and assign a respective fan speed for each temperature.

Chassis Fan 3 Setting

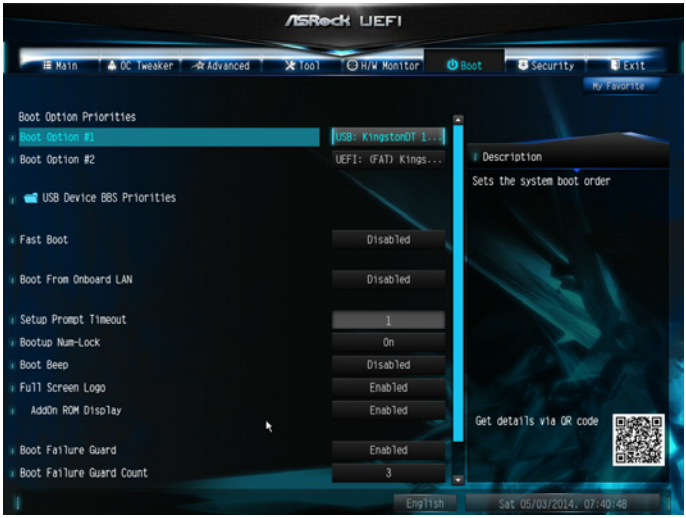
Select a fan mode for Chassis Fan 3, or choose Customize to set 5 CPU temperatures and assign a respective fan speed for each temperature.

Over Temperature Protection

When Over Temperature Protection is enabled, the system automatically shuts down when the motherboard is overheated.

4.7 Boot Screen

This section displays the available devices on your system for you to configure the boot settings and the boot priority.



Fast Boot

Fast Boot minimizes your computer's boot time. In fast mode you may not boot from an USB storage device. Ultra Fast mode is only supported by Windows 8.1/8 and the VBIOS must support UEFI GOP if you are using an external graphics card. Please notice that Ultra Fast mode will boot so fast that the only way to enter this UEFI Setup Utility is to Clear CMOS or run the Restart to UEFI utility in Windows.

Boot From Onboard LAN

Allow the system to be waked up by the onboard LAN.

Setup Prompt Timeout

Configure the number of seconds to wait for the setup hot key.

Bootup Num-Lock

Select whether Num Lock should be turned on or off when the system boots up.

Boot Beep

Select whether the Boot Beep should be turned on or off when the system boots up. Please note that a buzzer is needed.

Full Screen Logo

Enable to display the boot logo or disable to show normal POST messages.

AddOn ROM Display

Enable AddOn ROM Display to see the AddOn ROM messages or configure the AddOn ROM if you've enabled Full Screen Logo. Disable for faster boot speed.

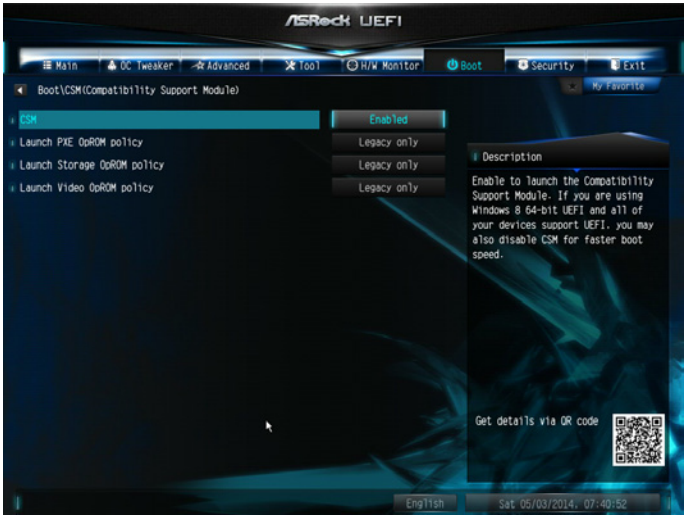
Boot Failure Guard

If the computer fails to boot for a number of times the system automatically restores the default settings.

Boot Failure Guard Count

Configure the number of attempts to boot until the system automatically restores the default settings.

CSM (Compatibility Support Module)



CSM

Enable to launch the Compatibility Support Module. Please do not disable unless you're running a WHCK test. If you are using Windows 8.1/8 64-bit and all of your devices support UEFI, you may also disable CSM for faster boot speed.

Launch PXE OpROM Policy

Select UEFI only to run those that support UEFI option ROM only. Select Legacy only to run those that support legacy option ROM only. Do not launch?

Launch Storage OpROM Policy

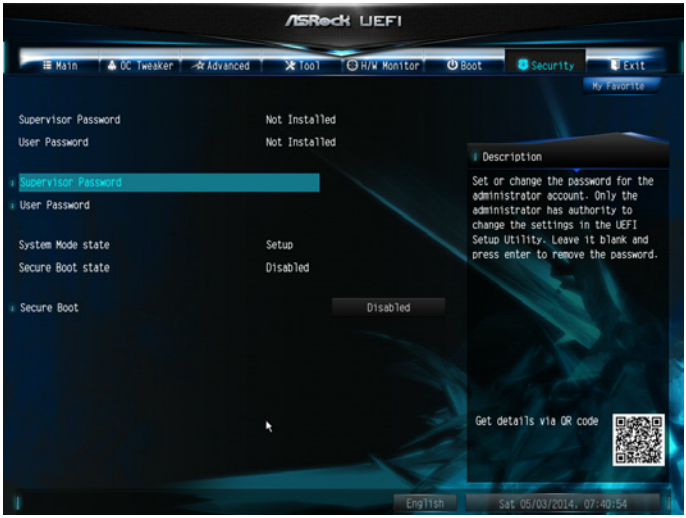
Select UEFI only to run those that support UEFI option ROM only. Select Legacy only to run those that support legacy option ROM only. Do not launch?

Launch Video OpROM Policy

Select UEFI only to run those that support UEFI option ROM only. Select Legacy only to run those that support legacy option ROM only. Do not launch?

4.8 Security Screen

In this section you may set or change the supervisor/user password for the system. You may also clear the user password.



Supervisor Password

Set or change the password for the administrator account. Only the administrator has authority to change the settings in the UEFI Setup Utility. Leave it blank and press enter to remove the password.

User Password

Set or change the password for the user account. Users are unable to change the settings in the UEFI Setup Utility. Leave it blank and press enter to remove the password.

Secure Boot

Enable to support Windows 8.1 / 8 Secure Boot.

4.9 Exit Screen

Save Changes and Exit

When you select this option the following message, "Save configuration changes and exit setup?" will pop out. Select [OK] to save changes and exit the UEFI SETUP UTILITY.

Discard Changes and Exit

When you select this option the following message, "Discard changes and exit setup?" will pop out. Select [OK] to exit the UEFI SETUP UTILITY without saving any changes.

Discard Changes

When you select this option the following message, "Discard changes?" will pop out. Select [OK] to discard all changes.

Load UEFI Defaults

Load UEFI default values for all options. The F9 key can be used for this operation.

Launch EFI Shell from filesystem device

Copy shellx64.efi to the root directory to launch EFI Shell.

Contact Information

If you need to contact ASRock or want to know more about ASRock, you're welcome to visit ASRock's website at http://www.asrock.com; or you may contact your dealer for further information. For technical questions, please submit a support request form at http://www.asrock.com/support/tsd.asp

ASRock Incorporation

2F., No.37, Sec. 2, Jhongyang S. Rd., Beitou District,

Taipei City 112, Taiwan (R.O.C.)

ASRock EUROPE B.V.

Bijsterhuizen 3151

6604 LV Wijchen

The Netherlands

Phone: +31-24-345-44-33

Fax: +31-24-345-44-38

ASRock America, Inc.

13848 Magnolia Ave, Chino, CA91710

U.S.A.

Phone: +1-909-590-8308

Fax: +1-909-590-1026